Dr. T's

MUSIC • SOFTWARE

ROLAND MT-32 Editor/Librarian

for Atari ST ☐ or Amiga ☑

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Dr. T Presents...

CAGED ARTIST'S
MT-32 EDITOR

For the Roland MT-32 synthesizer
and Atari ST or Commodore Amiga computers

February 1988 Version 2.0

Program by Robert J. Melvin
Ported to the Amiga by David Silver

Manual by Robert J. Melvin
Additional Material by David Silver
and Jim Johnson

PROMO

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CONTENTS

CHAPTER 1

GETTING STARTED

Welcome 1

Terminology 2

Amiga MIDI Interface 3

Connections 3

Set Up the Synth 4

Starting the Program on the Atari ST 4

Starting the Program on the Amiga 5

When the Program Starts 5

The MT-32 Primer 6

How This Program Works 8

CHAPTER 2

THE BASICS

Getting Around 10

The PART SELECT Box 11

Loading a Timbre 11

Using the Program Menus 11

Default Parameters 12

Bank Files 12

Playing the Mouse 12

Multi-tasking (Amiga Only) 14

Multi Program Environment (ST Only) 15

Modes 15

CHAPTER 3

MENUS

All Modes....16
SYSTEM Mode....17
TIMBRE BANK Mode....17
MAIN or PENV EDIT Mode....18
SET-UP Mode....18
PATCH BANK Mode....18
DRUMSET Mode....19

CHAPTER 4

PARAMETER EDITING

Selecting a Parameter....20
The Virtual Slider....20
Increment and Decrement Keys....21
Direct Numeric Entry....21
Name Entry....22

CHAPTER 5

SYSTEM MODE

Changing the System Parameters 23

Unit Number 23

Merge Mode 24

Merge 24

Solo 24

Rechannelize 24

Solo/Rech/Mouse Channel 25

Filter Program Changes 26

Mouse Play Mode 26

Mouse Mod Controller 27

Storage Drive (ST Only) 27

Colors 28

B/W (ST Only) 28

Save System Parameters to Disk 28

Loading or Saving the Randomization Mask 28

Rhythm Part Send 28

CHAPTER 6

TIMBRE BANK MODE

All About TIMBRE BANK Mode 29
Selecting an Internal Bank File 30
Selecting a Timbre 30
The Pointer 31
Loading a Bank File 31
Saving a Bank File 32
Send a Bank to the Synth 32
Store an Edited Timbre 32
Copy a Timbre to Another Position 32
Move a Timbre to a Different Position 33
Swap Timbres Between Two Positions 33
Format a Disk (ST Only) 34
Open a CLI Window (Amiga Only) 34
Print Out All Timbre Names 34
Exit the Program 35

CHAPTER 7

MAIN AND PENV EDIT MODES

Data in the MT-32 36
Memory Organization 37
Compare/Copy Parameters 38
Undoing Changes 39
Store the Edited Timbre 39
Randomize 40
Randomization Mask 41
Load and Save Partials 41
Copy/Swap Sections of a Timbre 42
Print Out the Edit Screen 42

CHAPTER 8 GRAPHIC EDITING

The Envelope Display 43
MT-32 Envelopes 44
Graphic Envelope Input 44

CHAPTER 9 SET-UP MODE

About SET-UP Mode 45
Get Part Timbres 46
Load and Save Set-up Parameters 46

CHAPTER 10 PATCH BANK MODE

Programming the Patch Bank 48
Loading and Saving Patch Banks 48
Fill Patch Bank to End 49
Using the Patch Bank 50

CHAPTER 11 DRUMSET MODE

Key Select/Play Box 52
Loading and Saving Drum sets 53

CHAPTER 12 MIDI MERGE

How Merge Works 54
A Review of Merge Modes 54
Using Merge 55

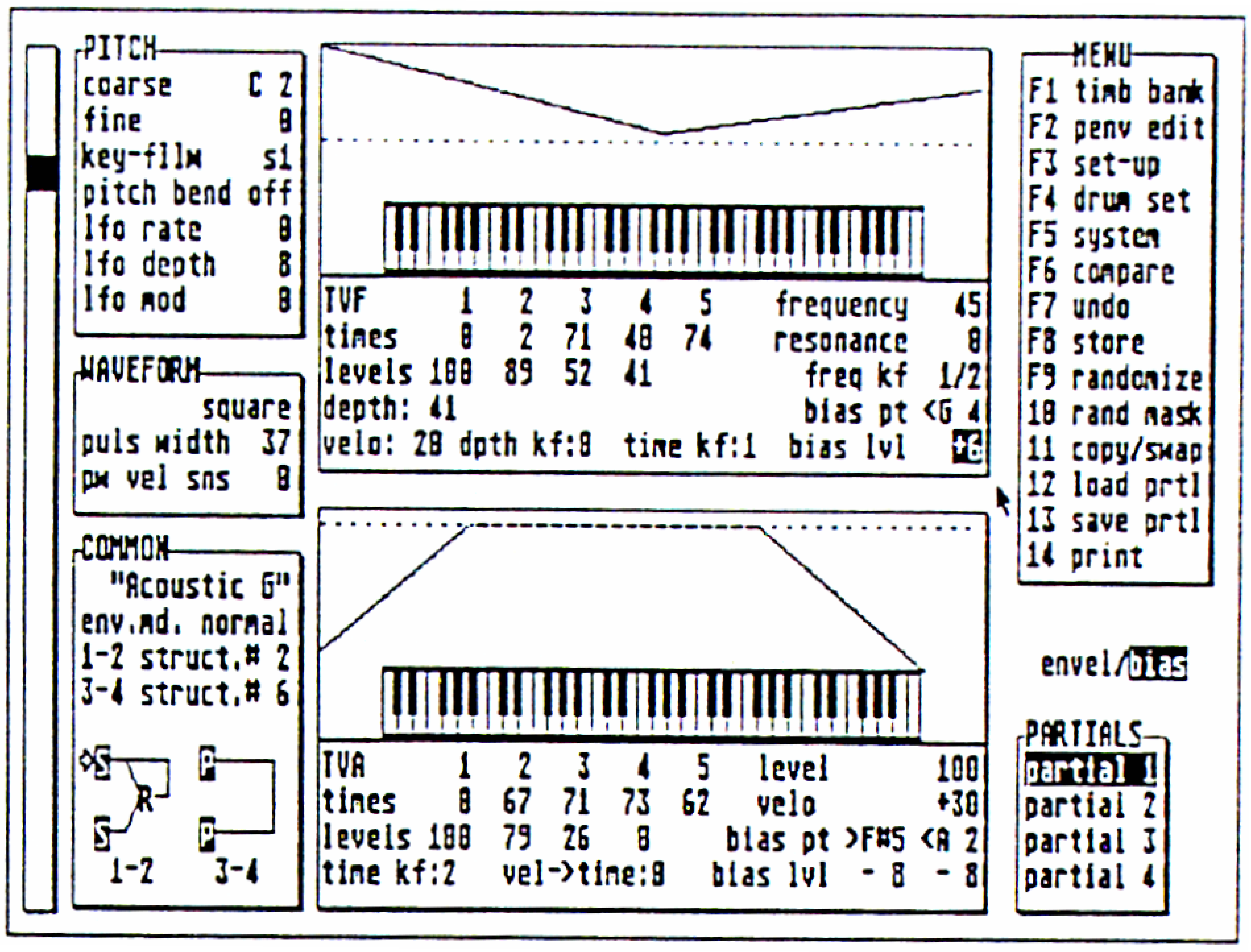
APPENDIX A HELPFUL HINTS 56

APPENDIX B VOICING THE MT-32 57

APPENDIX C SERVICE AND SUPPORT 68

CHAPTER 1

GETTING STARTED



```
PITCH                                                              MENU
coarse       C 2                                                   F1 timb bank
fine           0                                                   F2 penv edit
key-fllw      s1                                                   F3 set-up
pitch bend   off                                                   F4 drum set
lfo rate       0                                                   F5 system
lfo depth      8                                                   F6 compare
lfo mod        0                                                   F7 undo
                 TVF        1   2   3   4   5   frequency   45     F8 store
WAVEFORM         times      0   2  71  48  74   resonance    8     F9 randomize
          square levels   100  89  52  41           freq kf 1/2    10 rand mask
puls width    37 depth: 41                         bias pt <G 4    11 copy/swap
pw vel sns     0 velo: 28 dpth kf:0  time kf:1  bias lvl    +6     12 load prtl
                                                                   13 save prtl
COMMON                                                             14 print
  "Acoustic G"
env.md. normal                                                     envel/bias
1-2 struct.# 2
3-4 struct.# 6                                                     PARTIALS
                 TVA        1   2   3   4   5   level      100     partial 1
                 times      0  67  71  73  62   velo       +30     partial 2
                 levels   100  79  26   0     bias pt >F#5 <A 2    partial 3
   1-2    3-4    time kf:2    vel->time:0     bias lvl  - 8  - 8   partial 4
```

Welcome, and thanks for buying Dr T./Caged Artist software. My goal in creating this series of software products was to make the program intuitive enough such that the manual is barely necessary, without the usual trappings of user-friendliness (Are YOU Sure?). To me, this is important since my Muse gets P.O.'d and deserts me whenever I have to open a manual or think too strenuously about the software. I hope you find this software as useful as I do in the process of creating music. If you like it, there's plenty more ware (s.i.c.) this came from.

- Bob Melvin
a.k.a. Caged Artist

**** Note ****

In this manual, anything enclosed in brackets refers to a key on the computer keyboard (e.g. [RETURN] is the Return key). "Clicking on" something means positioning the mouse cursor over it and pressing the left mouse button.

Terminology

Roland has a particular terminology that they like to use:

Partial: The lowest and most basic unit of a MT-32 sound is a partial. The partial could be a complete PCM or synthesizer type sound, with its own "wave generator," and pitch, filter and amplitude envelopes (which they call the "time-variant" filter and amplifier, otherwise known as TVF and TVA).

Timbre: A timbre combines four partials, and ties them together with a group of parameters called the "common" parameters. Most important of these is the "structure," which determines how the four partials are utilized (analogous to the "algorithm" in Yamaha lingo).

Patch: A patch is a performance oriented feature, which maps MIDI program change numbers to either preset or user-programmed timbres, and allows these timbres to be transposed and detuned. In this program, the term "patch" also refers to the patch parameters portion of the Set-up, which contains the same information found in a patch in the Patch Bank.

Part: Not to be confused with "partial"!!! Being multi-timbral, the MT-32 has the ability to play eight different patches at a time, plus one rhythm patch. These are called "parts," because each is usually set to its own MIDI channel, and plays one "part" of a sequence. If you have a guitar controller in MONO mode, you could think of these as "strings."

Drum set (my term): I use the term "Drum set" to refer to what Roland calls the "Rhythm Setup" parameters. These parameters determine the MT-32's behavior on the Rhythm Part MIDI channel, mapping

MIDI note numbers to timbres, panning, volume and reverb.

Set-up (my term): A grouping of MT-32 "Temporary Patch" and "System" parameters, which together describe the MT-32's sound at a given instant in time (see Appendix B for details).

Amiga MIDI Interface

You can use any commercial or homebrew MIDI interface which is designed to attach to the Amiga's serial port. Interfaces which attach to the parallel port, such as the Roland MPU-401, are entirely unnecessary, and will not work with this software.

Connections

Before you start the program, you should connect the MIDI out of your computer to the MIDI in of the MT-32. There are several options for the MIDI in of your computer:

* You could connect the MIDI in of the computer to the MIDI out of the MT-32 (bidirectional communication). Only one command in the program requires bidirectional communication: the **get parts** command in the SET-UP Mode, which is used to get timbres for each of the eight parts from the MT-32 after you've edited a set-up.

* Otherwise, you could connect the MIDI in of the computer to the MIDI out of your master keyboard (or guitar, or whatever), and take advantage of this program's built in Merge feature, which makes it possible for you to play the MT-32 from the master keyboard while using this program. Refer to Chapter 12 for a complete discussion of the MIDI Merge feature.

**** Note ****

The MT-32's memory is VOLATILE! This means that is loses its memory when you turn power off. Without your computer and this program, the MT-32 isn't good for anything except presets.

Set Up the Synth

The MT-32's Unit Number must agree with the computer's Unit number. To check the MT-32 Unit Number, press the SOUND button while pressing the MASTER VOLUME button. The computer is initially set to number 17, as is the MT-32 when it is first turned on, but a different unit number may be selected in the SYSTEM Mode (more on that later).

Note for Atari ST Users

The Atari ST's MIDI out uses two pins which are usually not connected for a MIDI thru output. Many cables sold as MIDI cables wind up connecting these two pins to the MIDI signal, which may result in a random scrambling of the MIDI signal. IF YOU EXPERIENCE MIDI ERRORS, OR BIZARRE MIDI BEHAVIOR OF ANY KIND, THERE IS A GOOD CHANCE THAT YOU'RE USING THE WRONG TYPE OF CABLE! The cable should be a simple, cheap, three-conductor type. There are certainly ways to abuse a five-conductor type to make it work, but I will not go so far as to recommend mutilation as the solution.

Starting the Program on the Atari ST

Turn on the computer with the program disk in drive A. If you are using a color monitor, this program requires you to be in medium resolution mode: in the Options menu select **Set Preferences** - this dialog box will allow you to change the resolution. Select the icon labeled MT32EDIT.PRG by double-clicking on it. In a few seconds the program should be up and running.

**** Note ****

If you turn the ST's power off, leave it off for 10 seconds. Give its memory banks a full lobotomy. Otherwise, bizarre anti-social behavior may ensue.

To start the MT-32 Editor from within the KCS, first insert the program disk in the disk drive and click on **Ext** on the sequencer's Edit screen. Using the file select window that appears, load MT32EDIT.INF from whichever drive you've stored it on (or the program disk, if you haven't) and the Multi Program Environment will do the rest! After you've loaded the program, you can return to the editor from the KCS at any time by clicking on **M32**, to the right of **Ext**.

Starting the Program on the Amiga

The enclosed program disk is a bootable WorkBench disk. You can either boot your machine using this disk, by turning the machine on and inserting the disk in the internal drive (after KickStart-ing on an Amiga 1000), or insert the disk in an external drive after booting off of another WorkBench.

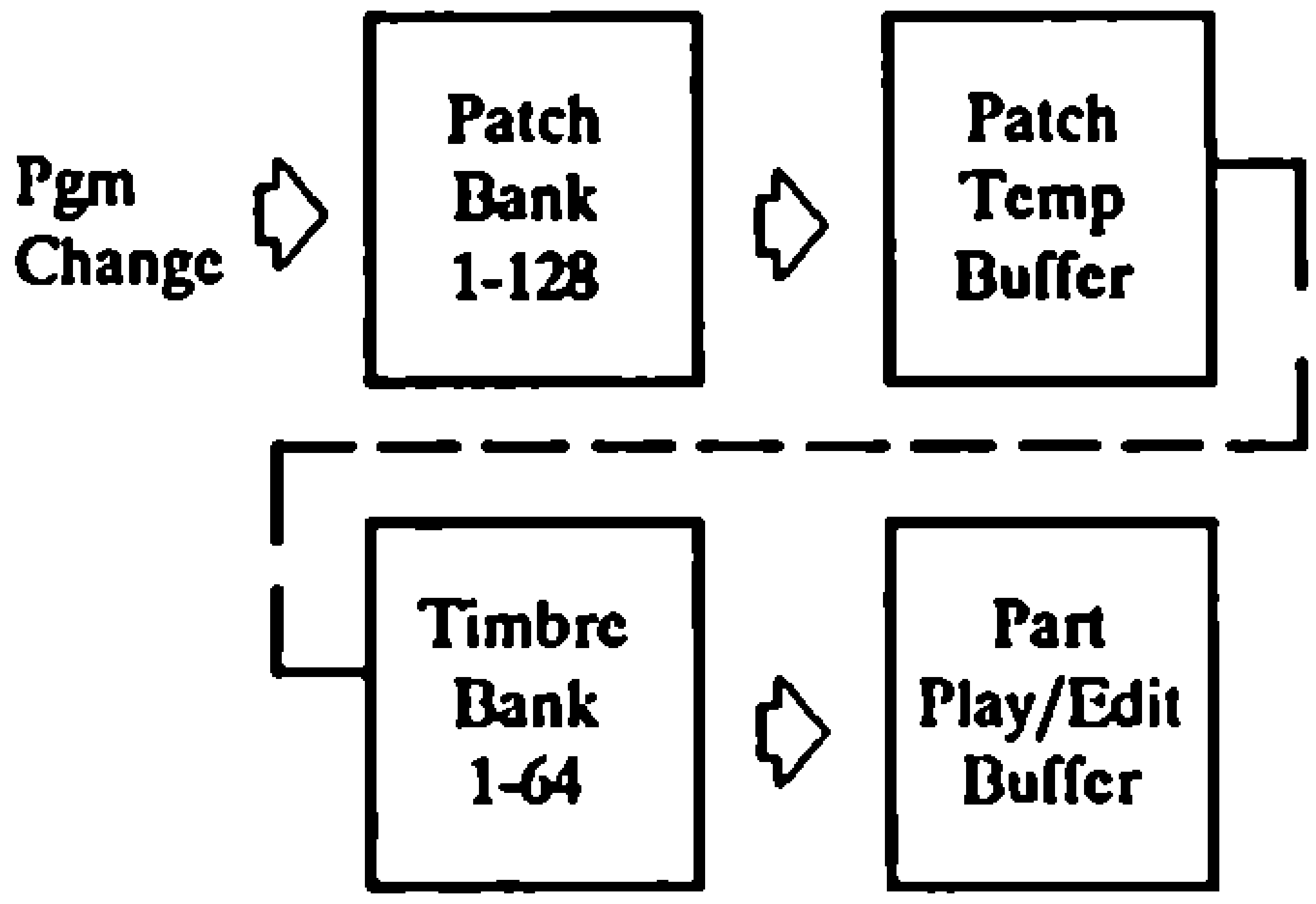
The program may be started either from the WorkBench, by double-clicking on the large icon that looks like an Amiga monitor, or from a CLI by typing the program name (the name that normally appears beneath the icon).

When the Program Starts....

it loads the Timbre Bank file INITBANK.M32, and the Set-up, Drum Set and Patch Bank DEFAULT files and sends them to the synth. The program then tries a **get parts** command, to get the timbre data for all eight parts from the MT-32. If you see a "MIDI data error" message flash on your screen, it's because you aren't hooked up bidirectionally. If **get parts** doesn't work, the computer will load the first eight timbres of INITBANK into the parts.

The MT-32 Primer

The MT-32 is set up to respond to external MIDI messages, (obviously because it has no keyboard). It's perfect for using with either a sequencer or a guitar controller. It may be used merely as another layer, echoing a master keyboard, but this would be wasting a great deal of sonic potential. Personally, I use it with a Roland GM-70 Guitar to MIDI converter, and it's the absolute best synth I've ever had for smoothly tracking a complex guitar performance (I use it in MONO mode, with lots of pitch bending and controllers).



In any performance situation, you will probably use MIDI program change messages to select the sound for each Part (each part should be on a different MIDI channel). The program change calls a corresponding patch from the MT-32's Patch Bank, which is loaded into the temporary patch buffer. This patch in turn points to a timbre which the MT-32 loads from one of its Timbre Banks into the Play/Edit buffer, and sets the detuning, bend range, assign mode, and reverb switch. Other functions, such as the output level and panning for each part, may be set by MIDI controller messages, or by directly editing the temporary patch buffer.

Patches give you a necessary degree of programmable control over the presets. With Roland's method, each channel is more independent than the Yamaha FB-01 "configuration" or TX-81Z "performance" memories, which some of you may be familiar with. Fortunately, Roland's system is very flexible - it allowed me to create a hybrid thing I call a Set-up, which is the equivalent of Yamaha's configuration. With a Set-up, all the current patches in the temporary patch buffer along with their channels, panning, volumes, and some master parameters are saved and loaded as a unit. It's like taking a snapshot of the MT-32 at a particular moment in time. The Set-up is particularly useful for orchestrating a sequence, since it allows you to save the orchestration for easy recall the next time you work with that sequence. The Set-up is the ONLY way to change and remember channel assignments, reverb settings and several other important MT-32 parameters. You will appreciate this feature when it comes time to orchestrate a piece (even if you're only using presets). Once you've found the correct timbres, volumes, reverb settings, and so on, simply use the sv **set-up** command and rest easy, knowing that your hard work is only a **ld set-up** command away, whenever you need it.

The MT-32 has a Rhythm part, which is similar to a drum machine. 64 note numbers on the MIDI channel assigned to the Rhythm part may be assigned to play any sound in the Rhythm or Memory Banks, at any volume and pan position, with or without reverb. Hours of fun.

Naturally, you'll want to create your own timbres and organize them into Timbre Banks, which is what the majority of this program is about.

How This Program Works

The computer needs to know exactly what timbres are stored in the MT-32 Memory Bank. It does this by designating one bank as the Memory Bank (the other bank is referred to as the Secondary Bank). The Memory Bank is marked with an arrow to the left of the **FILE SELECT** box. The computer's Memory Bank always reflects exactly what is in the MT-32's Memory Bank. Any changes made to this bank via **copy**, **move**, **swap**, **store**, or **load file** are correspondingly made in the MT-32. The first computer bank is usually the Memory Bank, but that can be changed by going to the Secondary Bank and choosing the **send all** command.

**** Note ****

The Memory Bank (marked with an arrow to the left of the **FILE SELECT** box) always contains a replica of the Memory Bank of the MT-32, as long as MIDI communication from the computer to the MT-32 is maintained. All changes to the computer's Memory Bank are immediately sent to the MT-32.

The computer does not, however, keep an entire copy of the MT-32's preset timbres in its RAM. Considering that many people will be running this program concurrently with a sequencing program, we chose not to grab an extra 32K of memory which could be used by sequences. Instead, presets may be edited by loading the PRESET_A, PRESET_B, or RHYTHM files, or by selecting the preset timbre in the Set-up and then choosing the **get parts** command.

The MT-32 loads a new timbre from its memory whenever a patch parameter is changed (such as **pan** in the SET-UP Mode). If this kind of behavior was duplicated in our program, you would temporarily lose your unstored edited timbres each time you changed a patch parameter. We don't want this to happen, so we've done the following:

The computer automatically sends the current Set-up as it enters the SET-UP Mode, and the eight Part Timbres as it enters the TIMBRE BANK or EDIT Modes. This insures that what you see is what you hear, and that none of your timbre edits will be accidentally trashed. If you edit a timbre in one of the EDIT Modes, it will not sound edited in the SET-UP Mode until you store it in the Memory Bank, which sends it to the synth memory, where it can in turn be used by the Set-up.

If you change a timbre or timbres in the SET-UP Mode, and you would then like to edit those timbres, the best way to do that is with a **get parts** command. Make sure the synth is hooked up bidirectionally, or you'll get the dreaded "MIDI data error" message.

CHAPTER 2

THE BASICS

Several concepts are best learned before attempting to use the program:

Getting Around

The entire program can be run with the mouse. The only time you will need to use the keyboard is while entering a new file name when saving a new file. Alternatively, nearly all the program's functions may be accessed without the mouse, with the exception of copying parameters, changing the randomization mask, and using the graphic editing.

The mouse operation should be fairly intuitive. The left mouse button always selects something, and the right always plays the synthesizer. Point at a parameter and select it. Point at the slider box and select to move the slider. Point at menu items and select them, etc.

**** Note ****

Please note that you do NOT have to point at the slider bar to move the slider! Point at a parameter (or at any empty space on the screen) and hold down the left button while moving the mouse up or down past the slider's current position, which "grabs" the slider and allows you to move it.

In this manual, I use the term "select" when mouse or keyboard entry is possible, and "click on" when only mouse entry is being referred to.

The PART SELECT Box

The **PART SELECT** box, found in the TIMBRE BANK Mode, shows the names and status of the MT-32's eight Temporary Part Timbres. These usually, but do not necessarily, coincide with the eight timbres programmed in the current MT-32 Set-up. The name of the timbre is followed by the bank position from which the timbre was originally loaded. If it was loaded from the MT-32's memory bank, it will show bank M. If it was loaded via the **get parts** command, it might be from bank A or B. If the display is blank, the timbres origins are either unknown, or external to the MT-32 (e.g. a timbre is loaded from the Secondary computer timbre bank). If a timbre has been edited, it will have an asterisk to the right of the name. Clicking in the **PART SELECT** box selects the "current" part, the listing for which is then highlighted.

Loading a Timbre

In the TIMBRE BANK mode, load a timbre by pointing at it and pressing the left mouse button (i.e. "click on it"). Or, use the cursor keys to move the pointer to the name of a timbre, and press [Return]. The timbre will be sent to the synth, and loaded into one of the computer's Part Edit Buffers. The current Part Edit Buffer is selected by clicking in the PART SELECT box.

**** Note ****

The MT-32 does not display any information about what you send it, so don't expect to see the timbre name.

Using the Program Menus

The menu choices appear on the right of the screen. To select a menu item, either click on it, or hit the function key shown to the left of the menu item. (11 and up are selected by [shift]-[F1], etc.).

Default Parameters

Try selecting system in the menu. You will now be in the SYSTEM Mode. Among the parameters in this mode are the Unit Number to which the program sends data, the program's color scheme, etc. These parameters may be changed and saved to disk, from which they are loaded when the program is booted. See Chapter 5 for details on the SYSTEM Mode.

Bank Files

A bank file is the basic unit of storage for this program. Bank files are loaded from disk. The timbres in the bank file may be moved, copied, or swapped between all the bank files in the computer's memory. A timbre may be edited and then stored back into a bank file. When a bank file has been changed in any of these ways, it must be saved on the disk to make the change permanent.

The computer contains internal memory for two MT-32 bank files, each of which contains 64 timbres. Switching between the bank files can be done whenever you see the **FILE SELECT** box - including during a copy, swap or store operation.

Playing the Mouse

The right mouse button is used to play the synthesizer or synthesizers connected to your computer. You can directly generate notes with the mouse. The **Mouse Play Mode** parameter (found on the SYSTEM Mode screen) controls the function of the mouse.

If **Mouse Play Mode** is set to **notes**, the right mouse button will play a single note on the **Solo/Rech/Mouse Channel** (another SYSTEM Mode parameter). The note number is selected by the left/right position of the mouse. The range of 80 notes is centered around the G which is the center key on a standard five octave keyboard. The velocity is selected by the up/down position of the mouse cursor when the note is turned on, with full velocity at the top of the screen and minimal velocity at the bottom. The note sustains for as long as you hold down the button.

The mouse can also be made to play glissando-style by setting the **Mouse Play Mode** parameter to **gliss**. With glissando, a new note is triggered when the right mouse button is held down and the mouse is moved horizontally. Every eight pixels (one character width) is a new key.

When playing either single notes or glissando, you may transmit modulation controller values by pressing the left button (while the right button is sustaining the note). The modulation amount is controlled by the vertical position of the mouse. The program uses the middle 2/3 of the screen to go from off to full modulation. The modulation returns to zero when the note is released. The mouse may simulate channel pressure (aftertouch), or any of the 32 continuous controllers (e.g. mod wheel, breath, or foot controller). The controller is selected via the SYSTEM Mode Mouse Mod Controller parameter.

The [Shift] and [Alt] (or [Alternate], on the ST) keys can also be used in conjunction with the **notes** and gliss mouse play modes. If the [Shift] key is held down when **notes** is selected, glissandos are produced, and if the [Alt] key is held down in either **notes** or **gliss** modes, then left/right motions of the mouse will send pitch bend messages. (The full MIDI pitch bend range is obtained within a range of 64 pixels (about an inch) on each side of the point where you first pressed the [Alt] key.) This is not only useful as a tool for trying out patches, it's also a *lot* of fun to play with.

Multi-tasking (Amiga Only)

If you have an Amiga, you may use multi-tasking, which makes one computer do the job of several computers plus a MIDI merge box. With the Amiga, the sequencer and several editors can all be running at the same time. You can start a sequence in the KCS, then switch to this program where you are able to edit sounds and even play the mouse while the sequence is running.

This program runs in its own individual screen in the standard Intuition environment. In order to make use of the Amiga's multi-tasking, you should be familiar with the Amiga system facilities for manipulating screens and windows. You will normally not see a drag bar at the top of the editor's screen. You can enable or disable the drag bar at any time simply by moving the mouse to the extreme right and clicking the left mouse button.

Once the drag bar is visible you can use it to raise or lower the editor's screen or rearrange all the screens (using the depth gadget), just as in most other programs. Note that Intuition provides a keyboard shortcut for rearranging screens. Pressing the left [Amiga] key along with the [N] or [M] keys activates this function. See the Amiga documentation for more details.

This program will not interfere with the operation of most other Amiga software. If you are running several applications that send MIDI data, you should be aware that strange things can happen when MIDI data streams are randomly intermixed. An attempt has been made to ensure that most MIDI messages generated by this software will be impervious to interference from other programs. This means that under most circumstances, you will be able to, for example, play a sequence with the KCS while simultaneously editing the parameters of a voice in your synthesizer.

Multi Program Environment (ST Only)

If you have an Atari ST with Dr. T's KCS (version 1.6 or later) and are running this program in Dr. T's Multi Program Environment, you may play sequences with the mouse without having to switch back to the KCS. The **Mouse Play Mode** parameter (described above) may be set to **sequence**, **range**, or **cue**, each of which play KCS sequences in a different manner. See the **Mouse Play Mode** parameter description in the SYSTEM Mode chapter for more detailed explanation.

Modes

- The SYSTEM mode shows system parameters (such as Unit number and MIDI Merge mode), and allows them to be changed.

- The TIMBRE BANK Mode shows the names of all available timbres in the computer's memory. This mode is used to organize timbres into bank files, and to load or save these bank files to disk. Also, this is where individual timbres are selected for editing (Chapter 6).

- The MAIN EDIT and PENV EDIT modes show individual timbre parameters (partial and common) and allow them to be changed under computer control (Chapter 7).

- The SET-UP mode allows editing of the current patch data for the eight Parts, including the extra pan and volume controls. Also, the MT-32 System Parameters, such as partial reserve, MIDI channel, and reverb settings may be edited (Chapter 9).

- The PATCH BANK Mode shows all 128 MT-32 patches, and allows them to be directly edited (Chapter 10).

- The DRUM SET Mode shows Rhythm part Set-up parameters, allowing MIDI note numbers to be mapped to timbres on the Rhythm part channel (Chapter 11).

CHAPTER 3

MENUS

Each Mode has its own menu in the upper right corner of the screen. The menu includes selections to take you to the other modes, as well as all the available operations for that mode. Menu items may be selected by either pointing and clicking or by pressing the associated function key listed beside each item. (11 means [shift]-[F1], etc.) The mode selections listed in the next section are found on all menus, and the functions that are unique to particular menus are listed after that. Details on each menu will be presented in the following chapters.

All Modes

system
To SYSTEM Mode.

timb bank
To TIMBRE BANK Mode.

main edit
To MAIN EDIT Mode.

penv edit
To PENV EDIT Mode.

patch bnk
To PATCH BANK Mode.

set-up
To SET-UP Mode.

drumset
To DRUMSET Mode.

SYSTEM Mode

sv config
Save system parameters to disk.

load mask
Load randomization mask from disk.

save mask
Save randomization mask to disk.

TIMBRE BANK Mode

sv config
Save all system parameters to disk.

load file
Load MT-32 bank file from disk.

save file
Save MT-32 bank file to disk.

copy
Copy timbre from one position to another.

move
Move timbre from one position to another.

swap
Exchange timbre between two positions.

store
Store edited timbre in a bank file.

get parts
Get timbres for all eight parts from the MT-32.

send all
Send a bank file to the MT-32.

print
Print out a list of timbre names.

format (ST only)
Format a blank disk for storage.

quit
Exit the program for good.

to kcs (ST/MPE only)
Return to the KCS in the MPE.

NewCLI (Amiga only)
Open a Command Line Interface window.

MAIN or PENV EDIT Mode	**comp/copy** Compare timbre with any other timbre, and copy parameters from it.
	undo Recall last edited timbre.
	store Store the edited timbre into a bank file.
	randomize Change parameters by a random amount.
	rand mask Select which parameters are randomized.
	copy/swap Move sections of data between partials.
	load prtl Load a partial from disk.
	save prtl Save the current partial to disk.
	print Print out the current screen's parameters.
SET-UP Mode	**ld set-up** Load a set-up from disk.
	sv set-up Save a set-up to disk.
PATCH BANK Mode	**ld p-bank** Load a patch bank from disk.
	sv p-bank Save a patch bank to disk.
	fill->end Copy a selected parameter to all higher-numbered patches.
	undo Undo the last edit or **ld p-bank** command.

DRUMSET Mode	**ld drums** Load a drum set from disk.
	sv drums Save a drum set to disk.
	undo Undo the last edit or **ld drums** command.

CHAPTER 4

PARAMETER EDITING

There are faster ways of editing if you're out to generate some new sounds (**randomize**, **copy/swap**, **load prtl**, etc.), but sooner or later you will need to get in there and tweak the individual parameters of a patch. This program provides several ways to edit a single parameter, using either the mouse or the computer keyboard.

Selecting a Parameter

A parameter may be selected either by clicking on its value, or by moving to it via the cursor keys. Once selected, the parameter may be changed in several ways:

The Virtual Slider

On the far left hand side of the screen is the "virtual slider", a hollow rectangle with a solid one inside it. When a parameter is selected, the solid rectangle's vertical position shows the parameter's current value. There are three ways to move the slider:

CLICK IN THE SLIDER BOX, and the slider will jump to the cursor's position and follow the cursor as long as the left mouse button is held.

CLICK ON A PARAMETER AND HOLD THE LEFT MOUSE BUTTON. Keep the left mouse button depressed and drag the mouse up or down such that you pass the current vertical slider position. The slider then becomes active, and works just as if you had clicked on it. Since up/down movement with the mouse takes less effort than lateral movement, this is almost always more convenient. All changes are sent to the synth.

CLICK IN THE MIDDLE OF NOWHERE. If you click on an area of the screen which has no parameters or menu items, you may change the currently selected parameter using the technique in the preceding paragraph. Of course, you must pass the current slider position before the slider starts moving. Once you've selected a parameter, this will make it easier to change: just aim for a wide open space, and with one sweeping gesture you're in business.

Increment and Decrement Keys

The [+] and [-] keys on the computer's numeric pad may be used to raise or lower the currently selected parameter's value by one. On the Amiga 1000, the [.] key takes the place of the [+] key.

Direct Numeric Entry

The current parameter may be changed by directly keying in a new value with the number keys on the computer. Simply type in the desired value, and, if necessary, press [Return]. As soon as you enter the first digit, the parameter display will change to a temporary "parameter input" display (unless the maximum parameter value is less than 10, in which case the change takes effect immediately). An underlined blank space to the left of the number you've entered signifies that the entry is not yet complete. Once you have pressed [Return] or entered the maximum number of digits, the parameter is changed and the new value is sent to the synth.

For example, to enter a value of 7 for a parameter which has a maximum value of 99, you could either press [7] and [Return] or press [0] and [7].

If a number is entered which exceeds the upper limit of a parameter's range, the value is set to the upper limit (likewise for the lower limit).

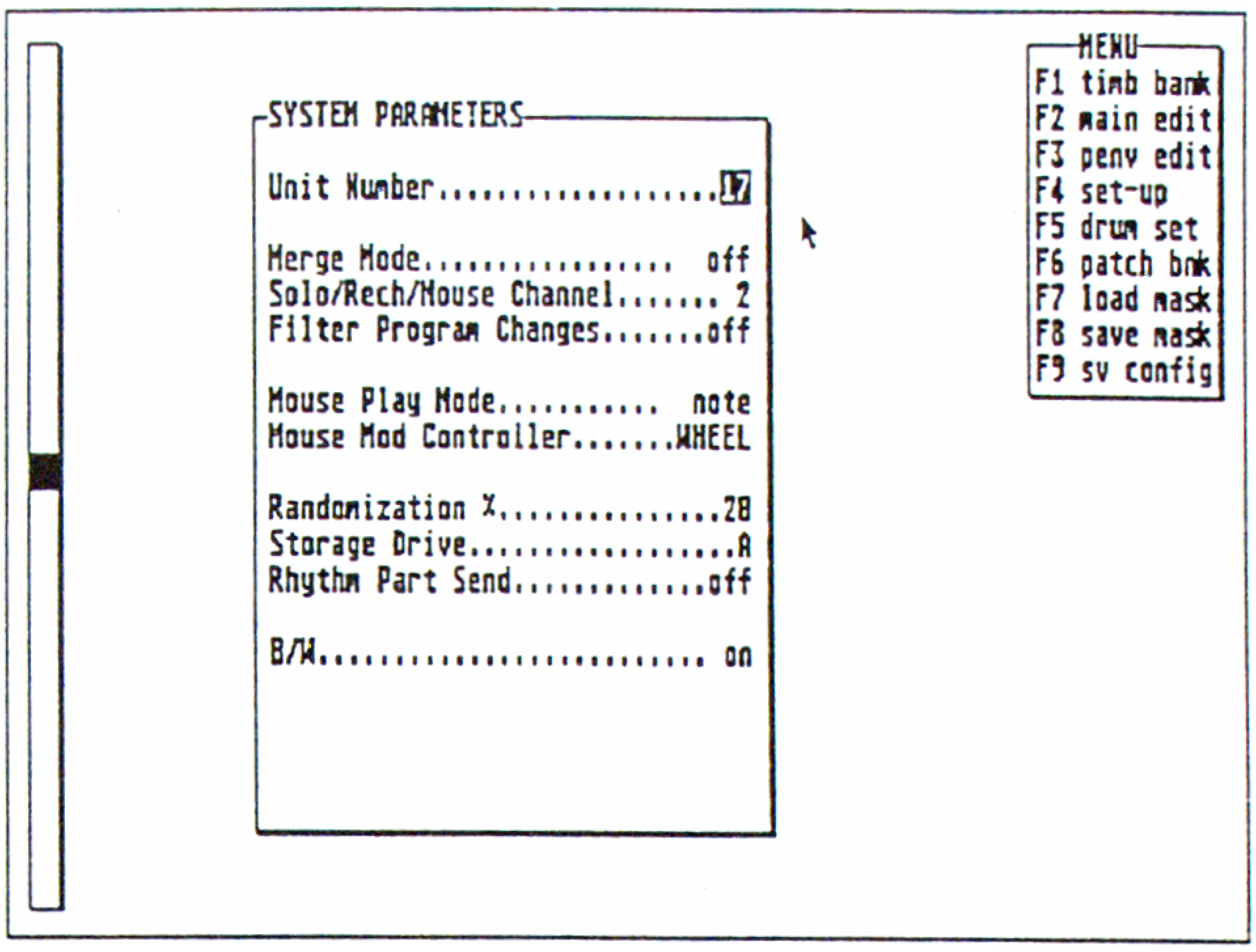
If a parameter may be either positive or negative, you will use the [+] and [-] keys on the regular keyboard (NOT on the numeric keypad). The [=] key (unshifted [+]) may be substituted for the [+] key. These keys directly change the sign of the current parameter's value.

Name Entry

The computer keyboard may be used directly to key in the timbre names, instead of numeric entry.

CHAPTER 5

SYSTEM MODE



```
SYSTEM PARAMETERS

Unit Number....................17

Merge Mode.................. off
Solo/Rech/Mouse Channel....... 2
Filter Program Changes.......off

Mouse Play Mode........... note
Mouse Mod Controller.......WHEEL

Randomization %..............28
Storage Drive.................A
Rhythm Part Send.............off

B/W......................... on
```

Changing the System Parameters

Select **system** in any menu. You may now change the parameters using the techniques discussed in Chapter 4. Be aware that some parameters will wait (if **Merge** is on) until all notes are off before changing. This was done to avoid the possibility of stuck notes. If this happens, you will receive a prompt and you'll have to hit a key or mouse button to continue. You can also save some of these parameters to disk, and they will be automatically loaded the next time you start the program.

Unit Number

The Unit Number is used in all System Exclusive messages sent by the computer. It should be set to the same Unit Number as the MT-32. To check the MT-32 Unit Number, press the SOUND button while pressing the MASTER VOLUME button. I assume all MT-32's are shipped with their unit number set to 17, which is also the way this program is shipped. If you have more than one MT-32 on line, use this parameter to switch between them.

Merge Mode

This parameter is used to select the mode of operation of the program's MIDI Merge (echo) feature. The merge feature makes it possible to load and edit sounds with this program while playing the synth from a master controller, sequencer, drum machine, or whatever. Connect the MIDI out of your controller to the MIDI in of the computer, and the MIDI out of the computer to the synthesizer (as usual). There are several modes of operation which you may want to explore:

Merge

When **Merge** is set to any value other than **off**, MIDI messages (except System Exclusive) received by the computer are echoed to the MIDI out, and merged with the System Exclusive messages from the program.

Solo

If **Merge** is set to **solo**, only the Channel Voice messages (note on and off, controllers, etc.) for the **Solo/Rech/Mouse Channel** (see below) are passed through. All other channels are filtered out. System Real Time messages (timing information) will also be merged. This is useful if you are merging several channels of MIDI from an external sequencer or drum machine, and want to solo one of the channels.

Rechannelize

If **Merge** is set to **rechannelize**, all Channel Voice messages at the computer's MIDI in are converted to the **Solo/Rech/Mouse Channel** (see below) before they are echoed to the MIDI in of the computer. If you are using a master keyboard to voice several synths on several different channels, this allows you to select the channel from the computer.

Solo/Rech/ Mouse Channel

This channel serves several functions:

- It is the channel on which the mouse plays (see "Playing the Mouse" in Chapter 2).
- It is the only channel allowed to pass through the computer in Merge Solo mode (see above).
- It is the channel to which all messages are converted in Merge Rechannelize mode (see above).

The MT-32 has eight parts plus a rhythm part, all of which may be on different channels. The computer automatically changes the **Solo/Rech/Mouse Channel** to play whatever part you've selected. The channel is updated according to the channels programmed in the SET-UP Mode:

- When you click on a part in the **PART SELECT** box.
- When you enter the DRUMSET Mode.
- When you select a part-related parameter in the SET-UP Mode.
- When a part's MIDI channel is changed in the SET-UP Mode.
- When a new set-up is loaded from disk.

With this automatic switching, you shouldn't need to change the **Solo/Rech/Mouse Channel** in the SYSTEM Mode unless you want to play another synthesizer.

**** Note ****

When MIDI merging is on, the program attempts to keep track of notes, so that it may know when to allow various changes in the Merge settings to occur without causing hung notes. If you get a prompt advising you that notes may be on, releasing them should allow the program to continue. If not, you'll have to hit a key on the computer or a mouse button to continue.

Filter Program Changes

When merging is on, program changes may come through and cause a ball of confusion. You don't want this to happen, so you should turn this parameter **on**, except for special occasions. Program changes will be blocked.

Mouse Play Mode

As described in Chapter 2, the right mouse button may be used to play single notes and glissandos. If you have an Atari ST, and this program was started from Dr. T's KCS (using the Multi Program Environment), it may also play entire sequences. The following is a brief description of the options - for more information, see "Playing the Mouse" in Chapter 2:

> **notes**: The mouse plays single notes. The note sounds until both mouse buttons are released.
>
> **gliss**: The mouse again plays single notes, but new notes are triggered when the mouse moves right or left, until both buttons are released. A new note is triggered on every eighth pixel.
>
> **sequence**: (ST/MPE only): This makes a right mouse click in this program equivalent to a right mouse click in the KCS Edit screen - it plays the current sequence or track.

range: (ST/MPE only): If a range of events is highlighted in the KCS Edit screen, the mouse button will play the range. Otherwise, the entire current sequence or track is played.

cue: (ST/MPE only): This option causes all tracks to be played. If a cue is set in KCS Track mode, it will play the current cue. If a range is highlighted on the KCS Edit screen, all tracks will be played over the specified range. This is the setting to use if you want to hear the sound you are editing in the context of the whole sequence.

On the ST only, all of these mouse play modes may be directly accessed *from any screen* of the program (except the SYSTEM Mode screen) by typing the proper control code on the computer.

notes	[Ctrl]-[N]
gliss	[Ctrl]-[G]
sequence	[Ctrl]-[S]
range	[Ctrl]-[R]
cue	[Ctrl]-[C]

Mouse Mod Controller

The controller which can be simulated by the mouse is selected with this parameter. The mouse can play pressure (aftertouch) or any continuous controller from 1 to 31. See Chapter 2 for more on how to play the mouse.

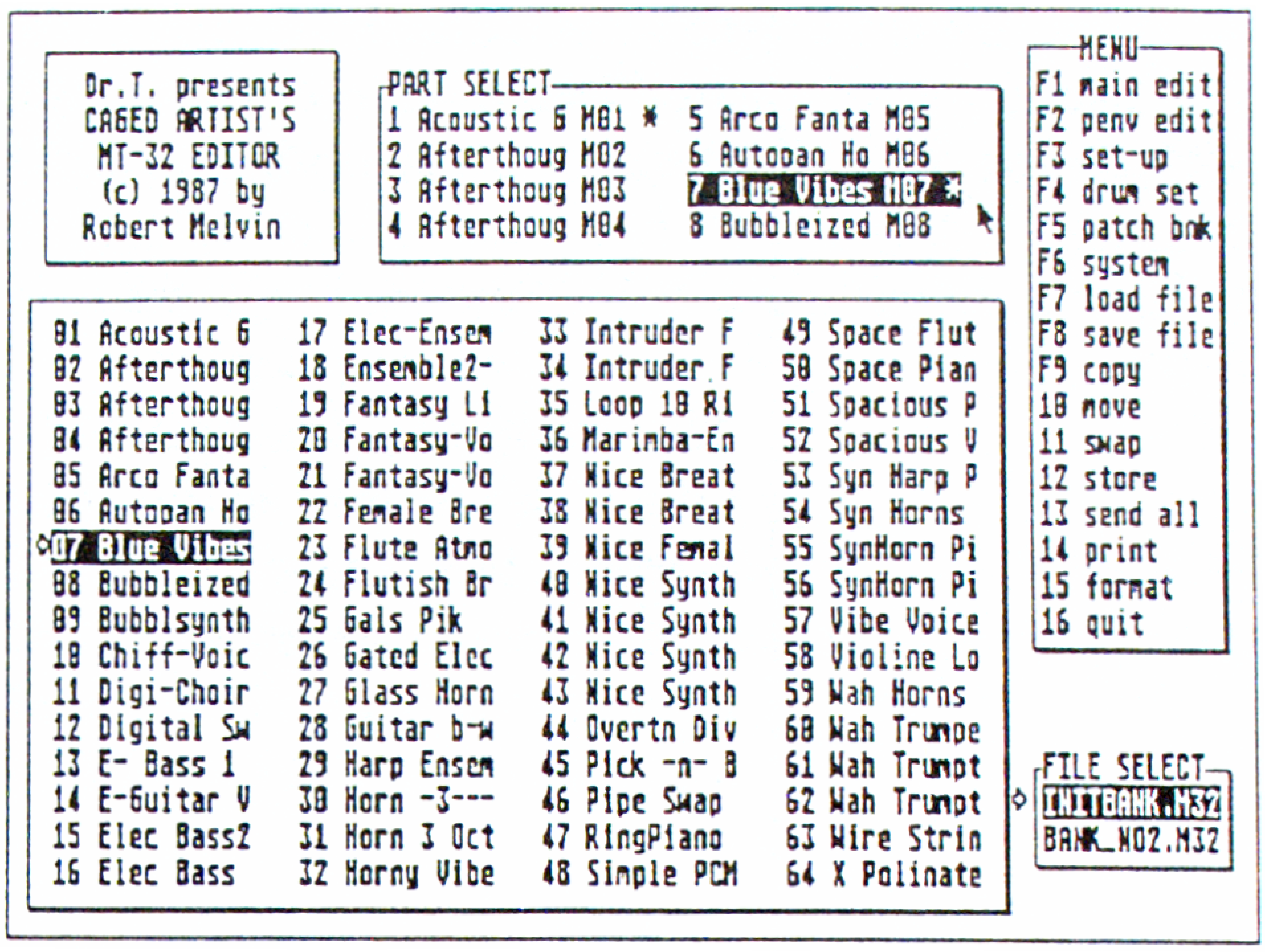
Storage Drive (ST Only)

The current drive is selected here. Any drive from A - H may be used to store bank files and randomization masks. The default value for this parameter is saved by the sv **config** command. The sv **config** command only saves to drive A, however, since that is the drive the program must be booted from.

Colors	If you are using a color monitor, you can change the color scheme. The colors are stored along with the other defaults by using the **sv config** command. You are free to customize the program to your whim, whether it be day-glo, earth tones, pastels or whatever!
B/W (ST Only)	With the high resolution monochrome monitor only, this parameter selects black on white (**on**) or vice versa.
Save System Parameters to Disk	With the program disk in the disk drive, select **sv config** in the SYSTEM Mode menu. All the system parameters, including the current randomization mask, are saved to disk, and will be automatically loaded the next time you run the program.
Loading or Saving the Randomization Mask	Use the **load mask** and **save mask** functions to store your favorite randomization masks on disk. The procedure is similar to the **load file** and **save file** functions covered in Chapter 6.
Rhythm Part Send	THE MT-32 HAD A BUG! On early MT-32s, an attempt to change any Patch parameter for the Rhythm Part will cause the MT-32 to automatically trash its Patch Bank memory - not a useful feature. This problem has since been fixed. If your MT-32 has this bug, leave this switch turned off.

CHAPTER 6

TIMBRE BANK MODE



```
Dr.T. presents      PART SELECT                              MENU
CAGED ARTIST'S      1 Acoustic 6 M01 *  5 Arco Fanta M05     F1 main edit
MT-32 EDITOR        2 Afterthoug M02    6 Autopan Ho M06     F2 penv edit
(c) 1987 by         3 Afterthoug M03    7 Blue Vibes M07 *   F3 set-up
Robert Melvin       4 Afterthoug M04    8 Bubbleized M08     F4 drum set
                                                             F5 patch bnk
                                                             F6 system
 01 Acoustic 6   17 Elec-Ensem   33 Intruder F   49 Space Flut   F7 load file
 02 Afterthoug   18 Ensemble2-   34 Intruder F   50 Space Pian   F8 save file
 03 Afterthoug   19 Fantasy Li   35 Loop 10 Ri   51 Spacious P   F9 copy
 04 Afterthoug   20 Fantasy-Vo   36 Marimba-En   52 Spacious V   10 move
 05 Arco Fanta   21 Fantasy-Vo   37 Nice Breat   53 Syn Harp P   11 swap
 06 Autopan Ho   22 Female Bre   38 Nice Breat   54 Syn Horns    12 store
◇07 Blue Vibes   23 Flute Atmo   39 Nice Femal   55 SynHorn Pi   13 send all
 08 Bubbleized   24 Flutish Br   40 Nice Synth   56 SynHorn Pi   14 print
 09 Bubblsynth   25 Gals Pik     41 Nice Synth   57 Vibe Voice   15 format
 10 Chiff-Voic   26 Gated Elec   42 Nice Synth   58 Violine Lo   16 quit
 11 Digi-Choir   27 Glass Horn   43 Nice Synth   59 Wah Horns
 12 Digital Sw   28 Guitar b-w   44 Overtn Div   60 Wah Trumpe
 13 E- Bass 1    29 Harp Ensem   45 Pick -n- B   61 Wah Trumpt    FILE SELECT
 14 E-Guitar V   30 Horn -3---   46 Pipe Swap    62 Wah Trumpt  ◇ INITBANK.M32
 15 Elec Bass2   31 Horn 3 Oct   47 RingPiano    63 Wire Strin    BANK_NO2.M32
 16 Elec Bass    32 Horny Vibe   48 Simple PCM   64 X Polinate
```

All About TIMBRE BANK Mode

When the program is first started, it will enter the TIMBRE BANK Mode. The screen displays the names of the two computer bank files, and the names of the 64 timbres in the currently selected bank file. Timbres may be loaded into or stored from one of the computer's Edit buffers. Timbres may be copied to another position in either bank file, swapped with another timbre from either bank file, or moved anywhere within the same bank file. A bank file may be downloaded to, or uploaded from the synth in its entirety.

The timbre which is loaded in the computer's currently selected Part Edit buffer is shown in inverse video. The **PART SELECT** box shows the contents of the Part Edit buffers, and allows the "current" buffer to be selected.

Selecting an Internal Bank File

Use the mouse to click on one of the file names in the **FILE SELECT** box. The timbre names for the selected file appear on the screen, and the file's name is highlighted. The **FILE SELECT** box may be used whenever it is displayed (including during copy, swap, or store operations). The number keys 1 and 2 will also select the file whenever the **FILE SELECT** box is displayed.

The computer has two MT-32 timbre bank files. One is designated as the "Memory Bank", the other is called the "Secondary Bank." The Memory Bank always contains exactly the same data as the MT-32's Memory Bank, and is designated by an arrow to the left of the **FILE SELECT** box.

Selecting a Timbre

To load a timbre into the computer's current Part Edit buffer, and send it to the synthesizer, simply point at the name and click the left mouse button. Or, lacking a mouse, move the pointer (see below) to the desired name and press [Return]. The timbre you have selected will now be available for editing in the MAIN and PENV EDIT Modes, and should be audible on your synth.

The **PART SELECT** box shows the names of all the timbres which are currently loaded, and allows you to select the current part. Also shown is the bank position from which they were loaded:

(blank): Signifies that the timbre was loaded from the Secondary Bank, or else it was loaded from a Memory Bank that has since been replaced.

A or B: The timbre was received via a get parts command, and originally comes from the MT-32's preset memory.

M: The timbre was loaded from the Memory Bank.

The Pointer

The timbre which is currently playing will be highlighted (shown in inverse video), both in the **PART SELECT** box and in the timbre bank (if it was loaded from the currently displayed bank). In addition, there is a small pointer which remains to the left of the timbre numbers. The pointer signifies that this is the timbre which will be loaded if [Return] is pressed, and this is the timbre which will be used for the **comp/copy** feature in the EDIT Modes.

The pointer may be moved with the mouse by clicking to the left of the timbre number, or by using the cursor keys.

Loading a Bank File

load file
This operation loads a bank file from the disk into one of the computer's temporary (RAM) bank files. With the display showing the bank file you wish to replace, select the **load file** operation. The computer will catalog the disk, displaying the names of all the bank files, as well as any folders (drawers) on the disk. Click on the desired file name, and then click in the OK box. If you prefer, you may also manually type in the file name, and press [Return].

If the current bank is the designated Memory Bank, the entire file will be immediately sent to the MT-32.

CAUTION:

If you have made important changes or updates to a bank file, you must save the file to disk before loading another file over it.

Saving a Bank File

save file
With the display showing the bank file you wish to save, select the **save file** function. If you are saving the file under the same name it had when it was loaded, all you need do is to click on the **OK** box or hit [Return]. Otherwise, you'll want to backspace over the old file name and then enter a new name (the ".M32" extension is automatically added).

Send a Bank to the Synth

send all
The entire currently selected timbre bank may be sent when the **send all** command is selected, replacing the 64 Memory Bank timbres in the MT-32. The current computer bank then becomes the designated Memory Bank.

Store an Edited Timbre

store
This command allows you to store your edited timbre in any bank file position, replacing whatever was in that position. The old position is highlighted. Select the position using the same method you would use to load a timbre. If you store a timbre in the designated Memory Bank, the individual timbre will be sent to the MT-32's Memory Bank.

** Note **

To make any change permanent, the altered bank must be saved to disk. See "Saving a Bank File".

Copy a Timbre to Another Position

copy
This command takes a timbre from either bank file, and copies it to any position in either bank file. This is a destructive copy, meaning that the timbre which occupies the position to be copied to is obliterated by the copy. See notes below.

You can copy timbres from the Secondary Bank into the Memory Bank. The copied timbres are sent directly to the MT-32's memory.

Move a Timbre to a Different Position

move
This command allows you to shuffle timbres within a bank file, without losing any data. The source timbre is moved to the selected destination position. All the locations between the source and destination are shifted to adjust for this change. See notes below.

Swap Timbres Between Two Positions

swap
This command allows two timbres from any bank file and position to be exchanged. See notes below.

Notes on Copy, Move and Swap

In all the above operations, select the source and destination timbres in the usual way - using the file select box or number keys, and clicking on the selected timbre. This will not disturb the current Edit buffer timbre.

If any timbres in the Memory Bank are affected by a **copy**, **move** or **swap**, these timbres are sent to the MT-32's memory.

These commands automatically repeat until you click on the **RETURN TO BANK MODE** box, or press the [ESC] key. The computer remembers the source and destination bank file, and automatically switches bank files for you on subsequent repetitions.

If you make a mistake, click in the **RETURN TO BANK MODE** box or hit [ESC] to cancel the operation, or click on **RE-SELECT SOURCE** if you selected the wrong source. These commands cannot be undone.

A simple way to edit the preset timbres is to load the file PRESET_A.M32 or PRESET_B.M32 into the Secondary Bank, and either copy, swap, or load and store the timbre into the Memory Bank.

Through all of these operations, the computer attempts to keep track of the location of the currently loaded timbre. The location is shown in reverse video.

Format a Disk (ST Only)

format

This command leads you through a series of dialog boxes which let you format a single or (if possible) double sided diskette. The first box asks you to insert a blank disk into drive A (and only drive A). The second box asks for single or double sided format. You should not select double sided if you only have a single sided disk drive. Clicking on **PROCEED** starts the process of formatting, or if you change your mind, click on the **CANCEL** box. The lower right hand side of the screen shows the progress (there are 80 tracks per side).

Open a CLI Window (Amiga Only)

NewCLI

Selecting this option temporarily suspends the execution of the editor, brings the WorkBench screen to the front and opens a new Command Line Interface (CLI) window. When you are finished with the CLI, just type "EndCLI" and the normal operation of the editor will resume.

Print Out All Timbre Names

print

The entire timbre list for the bank may be printed out by selecting the **print** function. If the printer is not ready, the ST program will wait for you to hit a key (or mouse button). If it's still not ready, **print** is cancelled. The Amiga version will wait for thirty seconds, then issue an error message, if the printer is not ready.

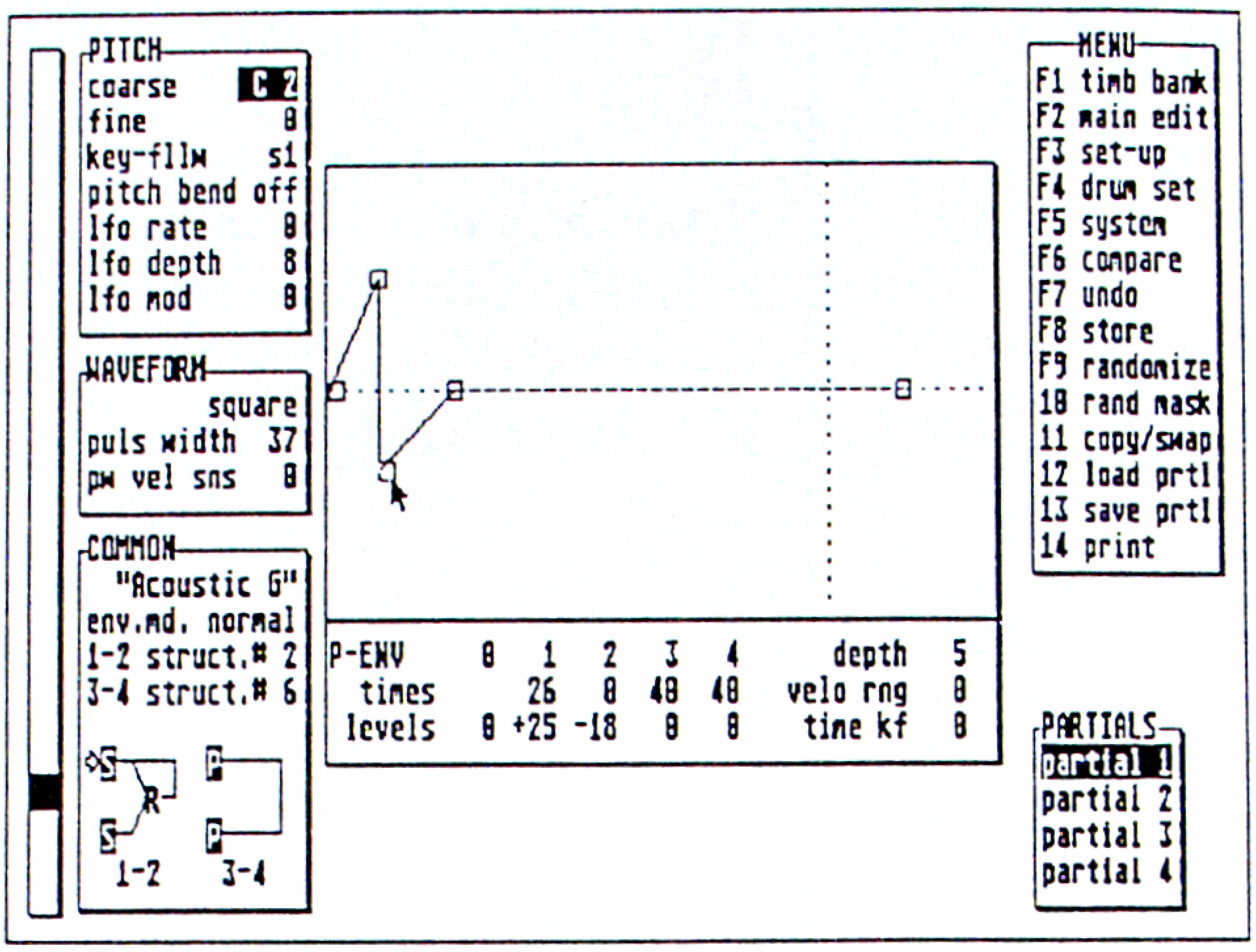
Exit the Program

quit or **to kcs**
The **quit** command allows you to quit the program. Everything important should be saved to disk before quitting, as the timbres in the computer's memory will be lost.

If the program is running under the MPE on the Atari ST, **quit** will be replaced by **to kcs**. Clicking on this option will take you directly back to the KCS, as you probably guessed.

CHAPTER 7

MAIN AND PENV EDIT MODES



```
PITCH
coarse          C 2
fine              0
key-fllw         s1
pitch bend      off
lfo rate          0
lfo depth         0
lfo mod           0

WAVEFORM
             square
puls width       37
pw vel sns        0

COMMON
  "Acoustic G"
env.md. normal
1-2 struct.# 2
3-4 struct.# 6

P-ENV    0   1   2   3   4      depth    5
 times      26   0  40  40   velo rng    0
 levels  0 +25 -10   0   0    time kf    0
```

Data in the MT-32

A single timbre in the MT-32 comprises a LOT of data. Don't be fooled by the size of its box, this machine is a monster!

Each timbre includes four partials. A partial includes sections on pitch, waveform, TVF (filter) and TVA (amplitude) envelopes, and a pitch envelope. You may click in the **PARTIAL SELECT** box to select one of the four partials for editing. The partials are tied together by the common data, which includes the all-important structure parameter - see Appendix D for more detail.

There are two EDIT Mode screens to handle all the data: the MAIN EDIT screen (shown above) and the PENV EDIT screen. Both screens show all the common data, as well as the pitch and waveform data for the current partial. The MAIN EDIT screen has the TVF and TVA envelopes, while the other has only the pitch envelope.

Memory Organization

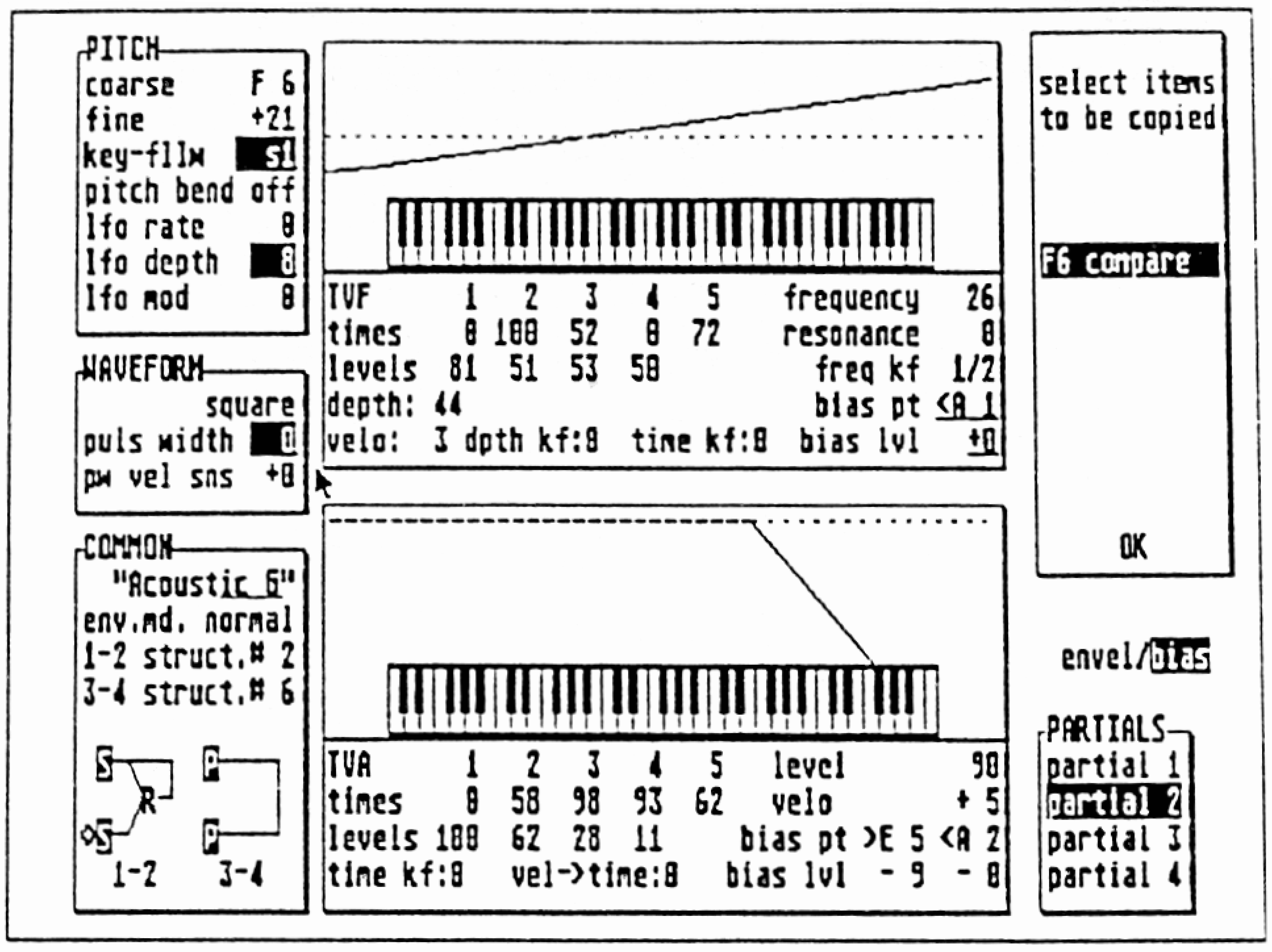
While it is certainly not necessary for you to understand all of the inner workings of this program in order to make use of it, sometimes it helps to know just what the computer is doing with the data you give it. This is especially important when you're copying or moving timbres, since sometimes it's easy to lose track of what's where.

In this program there are three buffers, or temporary storage locations, in the computer which are used in the editing of a sound: the Edit buffer, the Compare buffer, and the Undo buffer. In the BANK Mode, individual timbres are loaded from a bank of timbres into the Edit buffer, which holds eight timbres (one for each part). The timbres in this buffer are then edited using the techniques introduced in Chapter 4, as well as the techniques in this chapter, and stored back into the bank using the **store** command. The Compare buffer is used to compare an edited sound with another sound (usually the original sound), and to copy parameters from the other sound. The Undo buffer holds copies of the last edited sound for each part, which may be recalled by the **undo** command.

Muting Partials

Any partial may be muted by clicking on the **P** or **S** corresponding to that partial. If a partial is muted it is shown in normal video. Usually, the **P** or **S** is shown in inverse video, so it looks like a little box.

Muting is an extremely handy programming tool. It is used to isolate a single partial, making it easy to hear that partial's contribution to the total sound.



```
PITCH                     select items
coarse        F 6         to be copied
fine          +21
key-fllw      s1          F6 compare
pitch bend    off
lfo rate        0         OK
lfo depth       0
lfo mod         0         envel/bias

WAVEFORM                  PARTIALS
          square          partial 1
puls width      0         partial 2
pw vel sns     +0         partial 3
                          partial 4
COMMON
  "Acoustic 6"
env.md. normal
1-2 struct.# 2
3-4 struct.# 6

TVF      1   2   3   4   5    frequency  26
times    0 100  52   0  72    resonance   0
levels  81  51  53  50          freq kf 1/2
depth: 44                       bias pt <A 1
velo:  3 dpth kf:0  time kf:0  bias lvl  +0

TVA      1   2   3   4   5   level        90
times    0  50  90  93  62   velo         + 5
levels 100  62  20  11     bias pt >E 5 <A 2
time kf:0   vel->time:0    bias lvl - 9  - 0
```

Compare/Copy Parameters

comp/copy

This function causes the timbre from the current TIMBRE BANK Mode Pointer position (see Chapter 6) to be loaded into the Compare buffer, displayed, and sent to the synth. Note that parameters from any timbre in any bank file, not just the original timbre, may be compared or copied by going to the TIMBRE BANK Mode and repositioning the Pointer, using either the cursor keys or by clicking to the left of the timbre number.

If you have a color monitor, you will note that any parameters which have different values from those in the edit buffer are shown in a different color. On the monochrome monitor, they are underlined.

You may copy any parameters from the compared timbre by clicking on the parameters. This adds that parameter to a list of parameters which will be copied when you click in the OK box. (Clicking again removes that parameter from the list to be copied). Upon clicking in the OK box, the selected parameters are copied to the Edit buffer, and the resultant timbre is sent to the synth. If you made a mistake, undo will undo the whole operation.

Undoing Changes

undo

Undo is possible under the following circumstances:

* When a new timbre is loaded over an edited timbre.

* Whenever a new parameter is changed.

* When parameters are copied using **comp/copy**.

* When the **randomize** feature is used.

* When an envelope point is changed.

* When **get parts** is used in the SETUP Mode.

This command therefore undoes **randomize**, **comp/copy**, etc. It also can be used to gauge the effect of your latest parameter change, to help you stay on course when you're going for a certain sound.

Store the Edited Timbre

store

This function is the same as the **store** command in the TIMBRE BANK Mode. However, the program returns to the EDIT Mode one second after showing you that the timbre was indeed stored.

**** Note ****

To make any timbre change permanent, the bank must be saved to disk. See "Saving a Bank File" in Chapter 6.

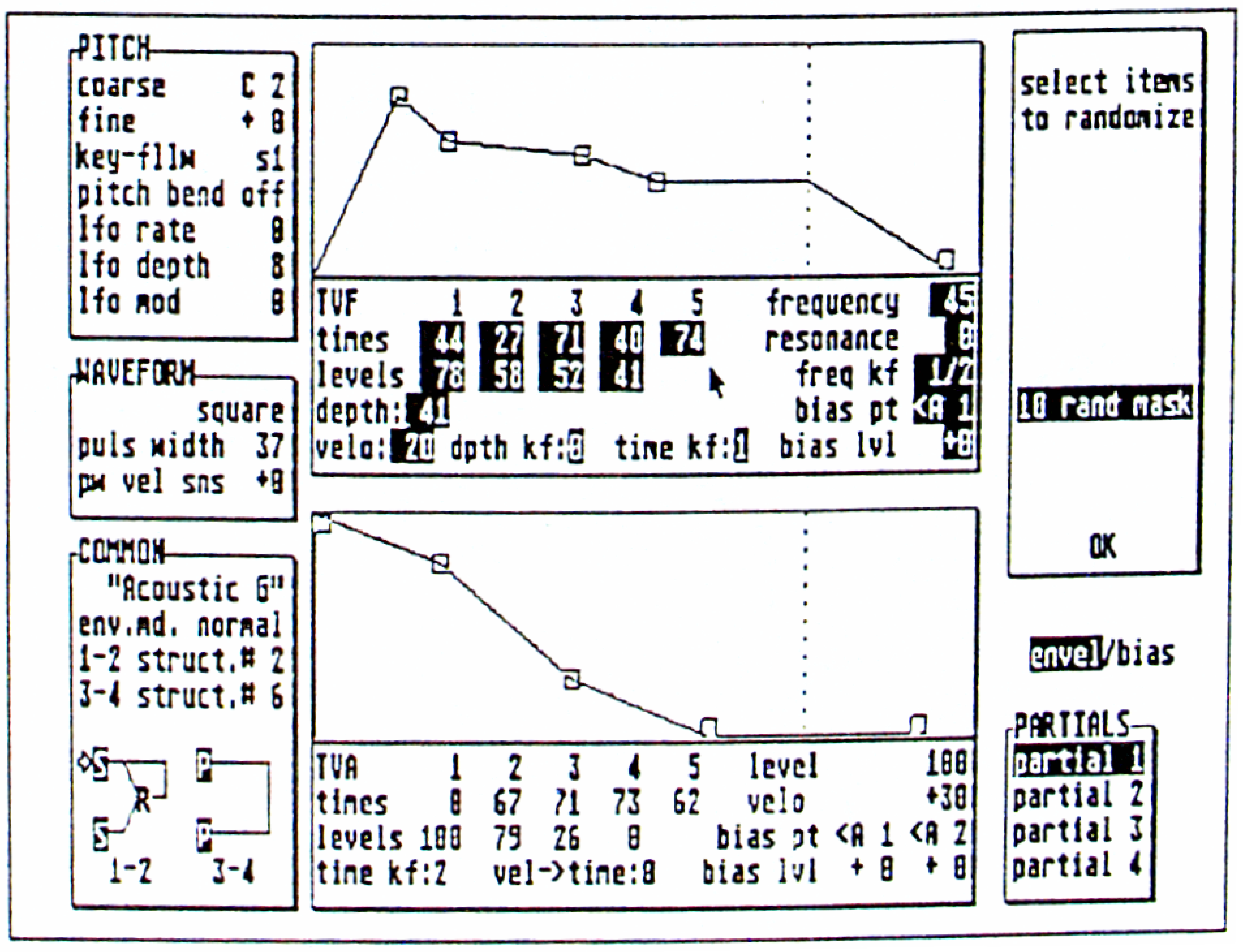
Randomize

randomize

This program includes a versatile and easy to use random timbre modifier/generator. It allows you to select the parameters which will be randomized, and the amount of randomization. It operates on the timbre currently in the Edit buffer, so it can be used to generate anything from slight variations to entirely random timbres.

First, set up a randomization mask (see next section). Then, set the **Randomization %** parameter to the desired value. The **Randomization %** factor, which is found and can be edited from the edit screen, is the amount (in terms of a percent of a parameter's total range) which a parameter can deviate. For example, if a parameter goes from 0 to 99, its range is 100, and a **Randomization %** of 20 means that a random number between -20 and +20 will be added to the parameter the next time it is randomized. This amount is always at least +/- 1.

Finally, select the **randomize** command. If you like what you hear, store it. If you don't, you can undo it with the **undo** command and try again. Or, you can just keep randomizing, and see what you get.



```
PITCH
coarse        C 2
fine          + 0
key-fllw       s1
pitch bend off
lfo rate        0
lfo depth       0
lfo mod         0

WAVEFORM
           square
puls width     37
pw vel sns     +0

COMMON
  "Acoustic G"
env.md. normal
1-2 struct.# 2
3-4 struct.# 6

TVF         1   2   3   4   5    frequency  45
times      44  27  71  40  74    resonance   0
levels     78  58  52  41          freq kf 1/2
depth: 41                          bias pt <A 1
velo: 20  dpth kf:0   time kf:1  bias lvl   +0

TVA        1   2   3   4   5    level            100
times      0  67  71  73  62    velo             +30
levels 100  79  26   0          bias pt <A 1  <A 2
time kf:2     vel->time:0       bias lvl + 0   + 0

select items
to randomize

10 rand mask

OK

envel/bias

PARTIALS
partial 1
partial 2
partial 3
partial 4
```

Randomization Mask

rand mask
The best feature of the randomizer is the fact that you select which parameters are to be randomized. You may choose to randomize waveform only, or TVF only, or just the LFO parameters, etc. Since you have control, you can use your creativity and a knowledge of the MT-32 parameters to make random timbres which have a greater chance of being useful.

Select **rand mask** and click on the parameters to be randomized, they will appear in inverse video. Clicking on one that's already on will turn it off. When you're done, click in the OK box. Use the **randomize** command to do the randomization.

To load or save a mask, or to save a mask as the default mask, follow the procedures in Chapter 5.

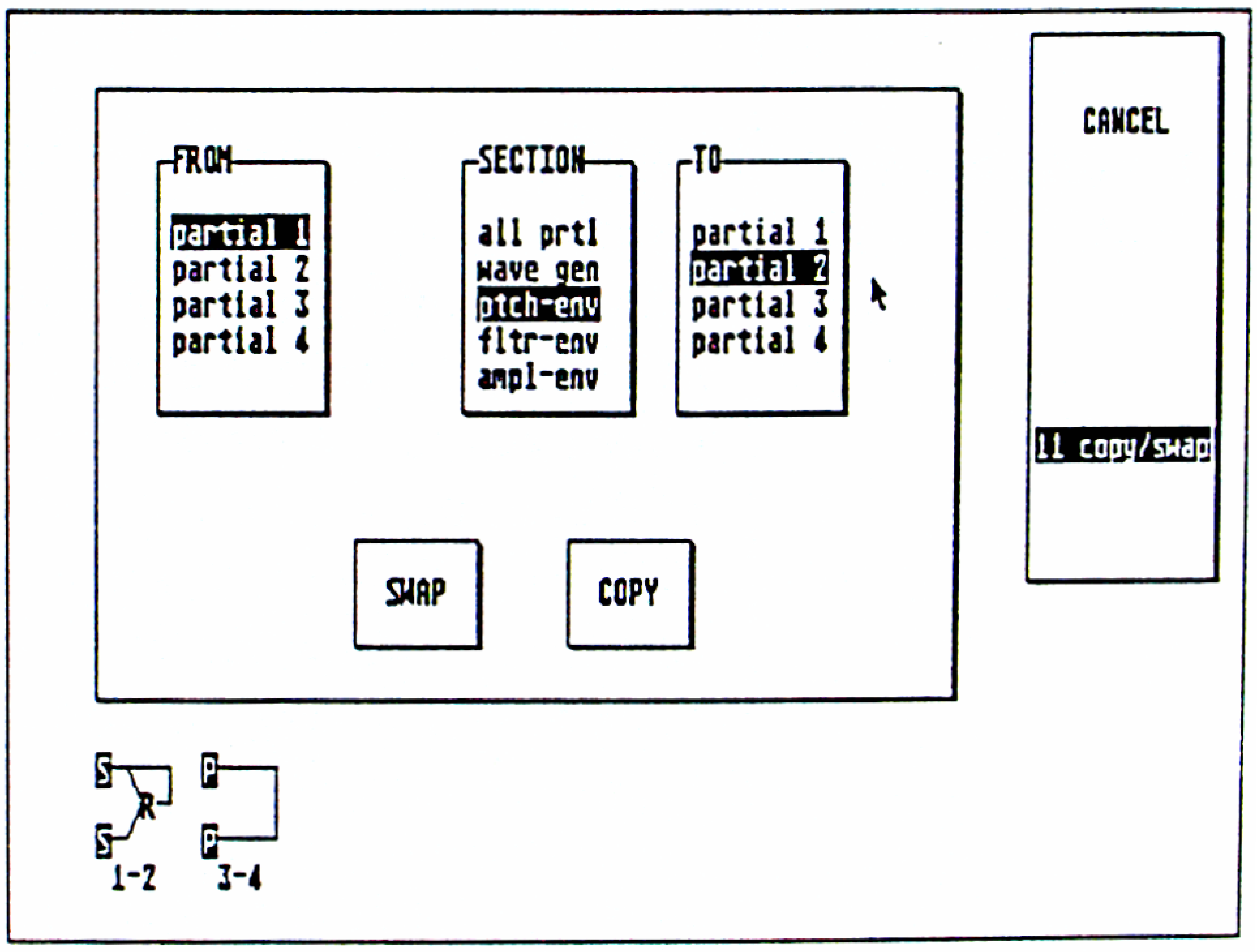
Load and Save Partials

load prtl
save prtl
The currently displayed partial may be individually saved to, or loaded from disk. In this manner, it is easy to create hybrid timbres which have elements of two or more existing timbres. These functions use the standard file selection methods, and work pretty much the same as **load file** and **save file** (see Chapter 6). When a partial is loaded, the entire timbre is re-transmitted to the MT-32. For best results when loading a partial, you should note its type (SYNTH, PCM, or RING MOD) and make sure the structure also calls for that type.

Copy/Swap Sections of a Timbre

copy/swap
This function moves sections of data around within a timbre. **COPY** is used to duplicate data. For example, you could copy one partial to all the others and then detune them all for a "fatter" sound. **SWAP** is used to exchange data. You may want to experiment with swapping just for fun.

To use this function, select source and destination partials in the **FROM** and **TO** boxes respectively, and choose the section of data to be copied or swapped in the **SECTION** box (**wave gen** includes both pitch and waveform parameters). When you're ready to proceed, click in either the **SWAP** or **COPY** box, and the action will take place. The resulting timbre is sent to the synth. If not satisfied, use **undo** to restore the old timbre.



Print Out the Edit Screen

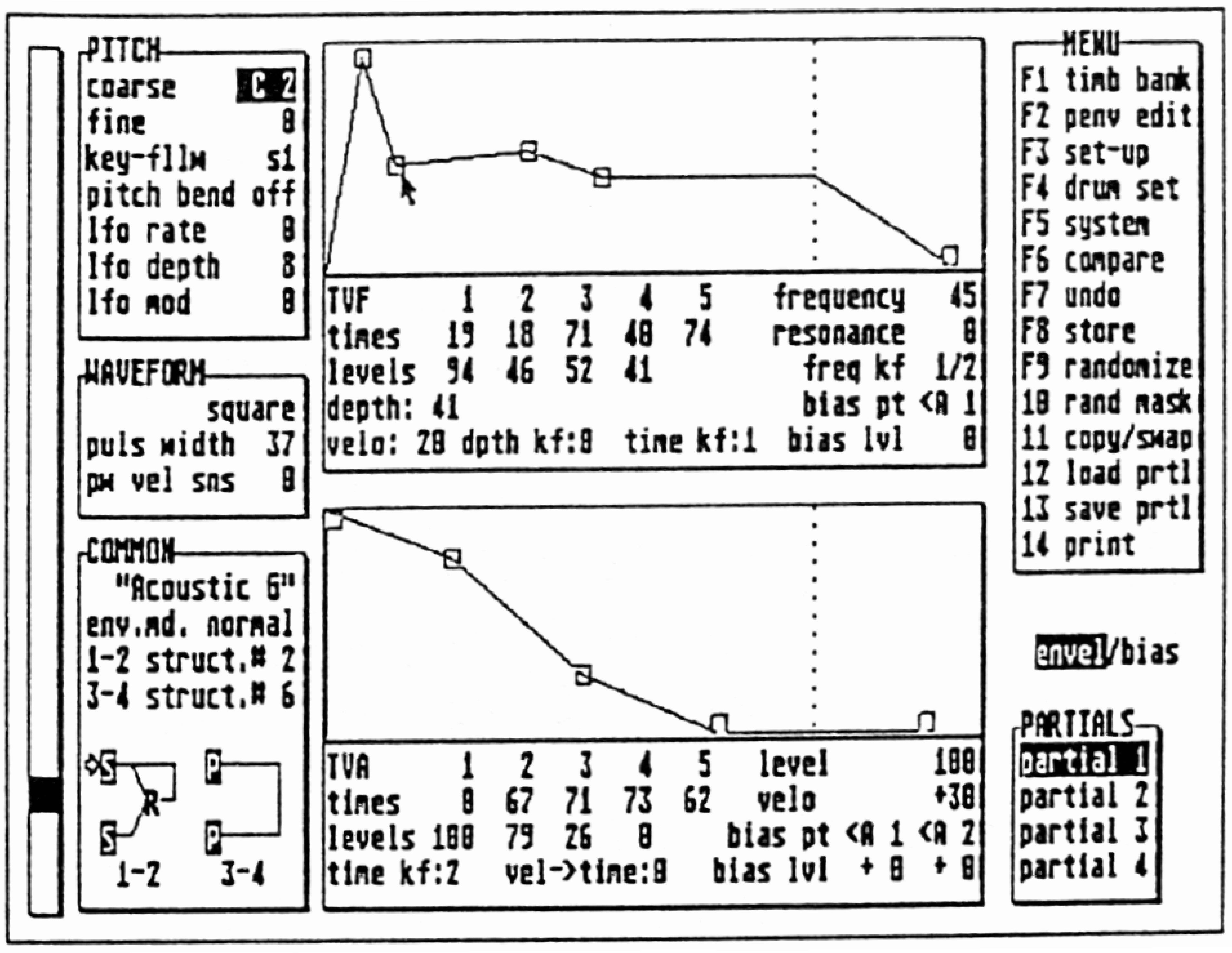
print
Use this function to print out the MAIN EDIT or PENV EDIT Mode screen text. Note that this function prints out only the page which is currently displayed. To print out an entire timbre, you should print out the MAIN EDIT and PENV EDIT screens for each partial.

CHAPTER 8

GRAPHIC EDITING

> Now here's something you'll really like!
> - Rocket J. Squirrel

Forget about those messy times and levels. In fact, forget about numbers, you won't need them here. Here you will shape the envelope with your mouse, and a minimal bit of hand/eye coordination. Graphic Envelope Editing makes it easy to pick a point on an envelope and move it anywhere it can be moved.



```
PITCH
coarse        C 2
fine            0
key-fllw       s1
pitch bend off
lfo rate        0
lfo depth       0
lfo mod         0

WAVEFORM
           square
puls width     37
pw vel sns      0

COMMON
  "Acoustic 6"
env.md. normal
1-2 struct.# 2
3-4 struct.# 6
1-2        3-4

TVF      1   2   3   4   5     frequency  45
times   19  10  71  40  74     resonance   0
levels  94  46  52  41           freq kf 1/2
depth: 41                        bias pt <A 1
velo: 20 dpth kf:0  time kf:1  bias lvl    0

TVA      1   2   3   4   5   level           100
times    0  67  71  73  62   velo            +30
levels 100  79  26   0       bias pt <A 1 <A 2
time kf:2    vel->time:0     bias lvl  + 0  + 0

MENU
F1 timb bank
F2 penv edit
F3 set-up
F4 drum set
F5 system
F6 compare
F7 undo
F8 store
F9 randomize
10 rand mask
11 copy/swap
12 load prtl
13 save prtl
14 print

envel/bias

PARTIALS
partial 1
partial 2
partial 3
partial 4
```

The Envelope Display

All envelopes are shown with level on the vertical axis and time on the horizontal. Key on is the left side of the screen, and key off is where the vertical dotted line is. On the PITCH ENV graph (shown above), the horizontal dotted line represents zero pitch change. Note the little boxes, which are used to grab a point for dragging.

MT-32 Envelopes

Both the TVF and TVA envelopes are 5-segment envelopes. The envelopes start at a level and time of zero. Each of the first four segments have level and time parameters which determine the level of the next point and the amount of time it takes to reach it. The fourth segment is usually the sustain segment, and its level is held until the key is released, at which time the fifth segment brings the level back to zero. If the common parameter **envelope mode** is set to **no-sus** the fifth segment will begin immediately after the fourth segment.

Graphic Envelope Input

To edit a point, click in its box, and keeping your finger firmly placed on that left mouse button, drag it around. When you have released, the updated parameters will be sent to the synth, and you can play the mouse a little to hear what you did.

Use the **undo** command in the menu to undo a graphic editing change. This will undo the most recent change only.

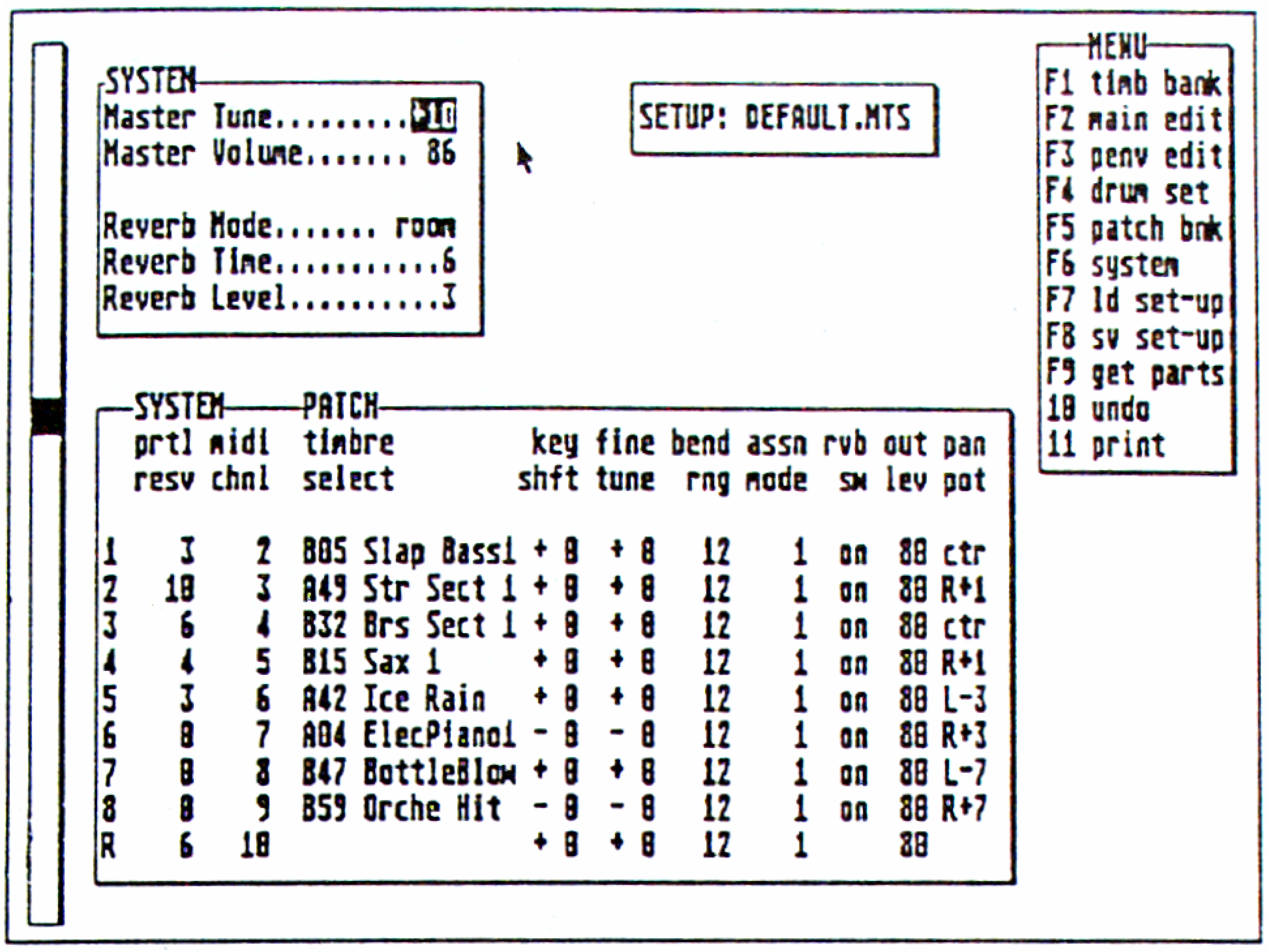
**** Note ****

The graphs do not include effects due to the **time kf** and **vel->time** parameters. If two envelopes look the same but sound different, check these parameters.

None of the envelopes are accurate with respect to a linear time scale, but they do provide a good visual reference and are easier to deal with than accurate ones would be.

CHAPTER 9

SET-UP MODE



```
SYSTEM
Master Tune.........10
Master Volume....... 86

Reverb Mode....... room
Reverb Time...........6
Reverb Level..........3

SETUP: DEFAULT.MTS

MENU
F1 timb bank
F2 main edit
F3 penv edit
F4 drum set
F5 patch bnk
F6 system
F7 ld set-up
F8 sv set-up
F9 get parts
10 undo
11 print

SYSTEM    PATCH
 prtl midi timbre          key fine bend assn rvb out pan
 resv chnl select          shft tune rng mode  sw lev pot

1   3   2 B05 Slap Bass1 + 0  + 0  12    1  on  80 ctr
2  10   3 A49 Str Sect 1 + 0  + 0  12    1  on  80 R+1
3   6   4 B32 Brs Sect 1 + 0  + 0  12    1  on  80 ctr
4   4   5 B15 Sax 1      + 0  + 0  12    1  on  80 R+1
5   3   6 A42 Ice Rain   + 0  + 0  12    1  on  80 L-3
6   0   7 A04 ElecPiano1 - 0  - 0  12    1  on  80 R+3
7   0   8 B47 BottleBlow + 0  + 0  12    1  on  80 L-7
8   0   9 B59 Orche Hit  - 0  - 0  12    1  on  80 R+7
R   6  10                + 0  + 0  12    1      80
```

About SET-UP Mode

The SET-UP Mode combines MT-32 system parameters, such as master volume, reverb type, MIDI channel assign, etc., with the current patch parameters for all eight parts plus the rhythm part.

Set-up parameters may be edited, saved to, and loaded from disk. The MT-32 system parameters, as well as volume and pan, do not get stored in any sort of bank form (unlike the patch parameters). The only way to save these parameters is by saving Set-up parameters to disk.

When a parameter is selected which corresponds to a part (1 - 8 or R), the Solo/Rech/Mouse Channel is automatically changed to that part's channel, making it easy to check things out by playing the mouse.

Get Part Timbres

get parts
Choose this command to get the timbres for all the parts as programmed in the SET-UP Mode, and put them in the computer's edit buffers. When you load a Set-up, or change the timbre select for a part, the timbre is loaded in the MT-32. The timbre is not loaded into the computer's edit buffer, however, until you use the **get parts** command. These are the basic steps you should take in editing timbres in a Set-up:

* Edit the Set-up to get it as close as possible.

* Choose the **get parts** command.

* Edit the timbres in MAIN or PENV EDIT Mode.

* Use **store** to store the timbres in the designated Memory Bank.

* Save both the Memory Bank and Set-up to disk, using **save file** and **sv set-up**.

** Note **

The MT-32 must be connected bidirectionally for **get parts** to work.

Load and Save Set-up Parameters

ld set-up
sv set-up
All Set-up parameters may be saved to disk. When loaded from disk, the parameters are also sent to the MT-32, replacing the current MT-32 system and patch parameters, which causes timbres to be loaded into all eight parts. The **ld set-up** and **sv set-up** functions are similar to the **load file** and **save file** functions covered in Chapter 6.

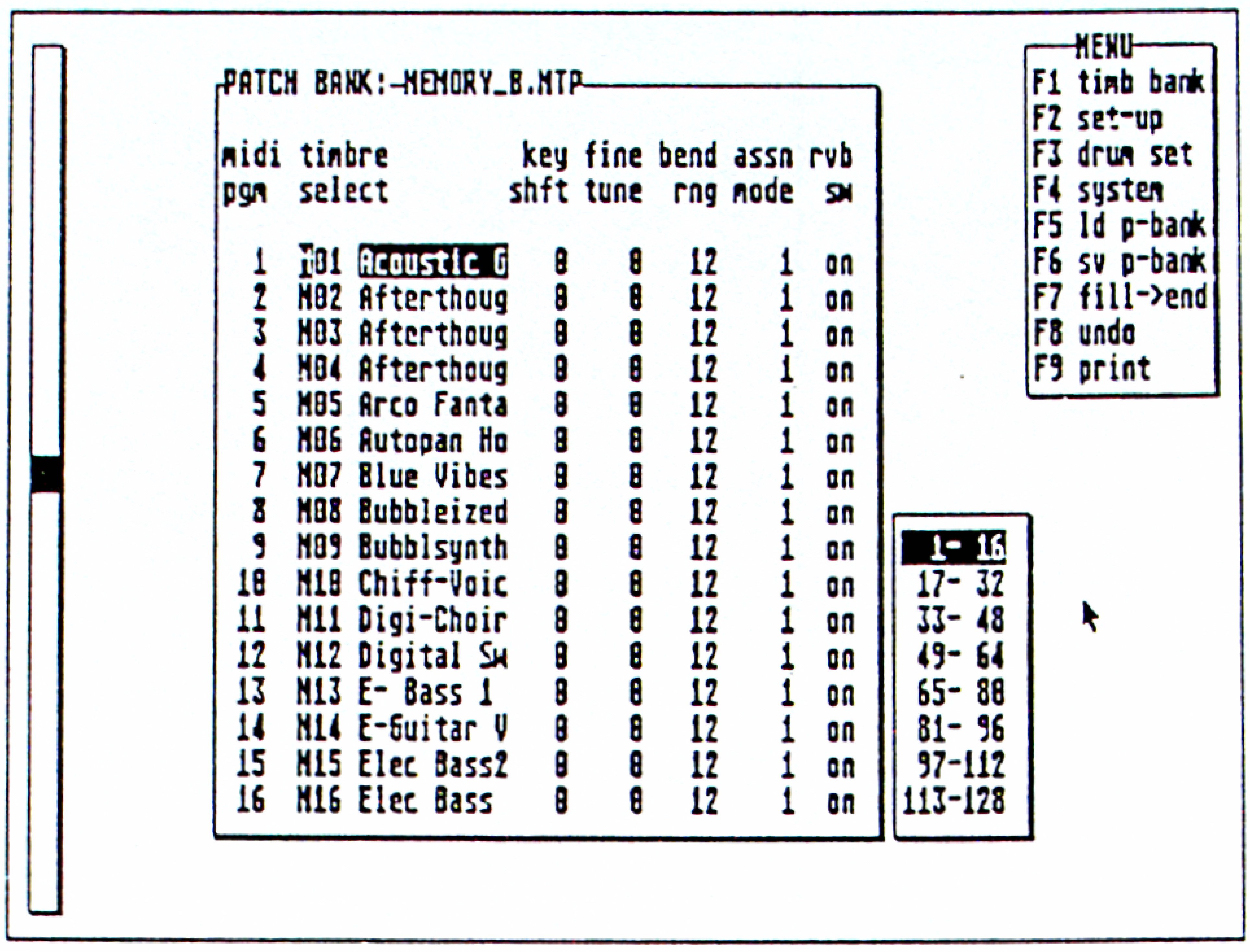
The Set-up can be used to save the state of the MT-32 for a particular performance. The MT-32 can be restored to this state by loading a Set-up file from disk.

** Note **

If the Set-up uses timbres from the MT-32 Memory Bank, the timbres in the MT-32 must be the same as when the Set-up was saved, since the timbres are referred to by number only.

CHAPTER 10

PATCH BANK MODE



PATCH BANK:-MEMORY_B.MTP

midi pgm	timbre select		key shft	fine tune	bend rng	assn mode	rvb sw
1	M01	Acoustic G	0	0	12	1	on
2	M02	Afterthoug	0	0	12	1	on
3	M03	Afterthoug	0	0	12	1	on
4	M04	Afterthoug	0	0	12	1	on
5	M05	Arco Fanta	0	0	12	1	on
6	M06	Autopan Ho	0	0	12	1	on
7	M07	Blue Vibes	0	0	12	1	on
8	M08	Bubbleized	0	0	12	1	on
9	M09	Bubblsynth	0	0	12	1	on
10	M10	Chiff-Voic	0	0	12	1	on
11	M11	Digi-Choir	0	0	12	1	on
12	M12	Digital Sw	0	0	12	1	on
13	M13	E- Bass 1	0	0	12	1	on
14	M14	E-Guitar V	0	0	12	1	on
15	M15	Elec Bass2	0	0	12	1	on
16	M16	Elec Bass	0	0	12	1	on

Programming the Patch Bank

The PATCH BANK Mode allows you to directly edit the patches stored in the MT-32. There are 128 patches, 16 of which are visible at any time. The left-hand column shows the MIDI program change number of the patch (1 - 128). You may click in the box in the lower right corner of the screen to select the range of program change numbers shown.

** Note **

To hear any audible change, the corresponding MIDI program change message must be sent, so this isn't an immediate mode like SET-UP was. To hear a patch, you could easily try it in SET-UP Mode, then program it in PATCH BANK Mode.

Loading and Saving Patch Banks

ld p-bank
sv p-bank
Patch Banks are individually loaded from and saved to disk with these commands. When a Patch Bank is loaded with this command, it is automatically sent to the MT-32. The commands are similar to the **load file** and **save file** commands in the TIMBRE BANK Mode.

The current Patch Bank file name is shown at the top of the parameter display box.

Fill Patch Bank to End

fill->end
This function takes the currently selected parameter and copies it to all higher-numbered patches, then sends the result to the MT-32. This could be used, for example, to change all the bend ranges to 2. First, change #1's bend range, then select **fill->end** and it is done. If you make a boo-boo, **undo** may be used to undo this function.

Undoing Changes

undo
The **undo** command will undo the most recent edit, or the latest **ld p-bank** or **fill->end** command.

Using the Patch Bank

If you need to use MIDI program change commands, you may need to edit the Patch Bank. The Patch Bank is like a typical "program change" or "patch map" table, with some extra goodies thrown in, as I mentioned in Chapter 1. As I see it, there are several cases in which you will need to program the patch bank:

* If you use the MT-32 as a single-timbre layering synth, you may want to tailor the Patch Bank so that program changes on the master synth call up appropriate timbres on the MT-32. Similarly, if a sequence has already been recorded (using a different synthesizer), and you can't change or eliminate the program changes embedded in the sequence.

* You will need MIDI program changes in your sequence if you wish to switch programs in mid-sequence. In this case, you may want to consider the following idea: The sequencer should allow you to enter program changes, so you could designate 1 - 16 as part 1's program changes, 17 - 32 as part 2's, etc. In the Patch Bank you could then program the sequence of timbres for each part. This, along with recording pan and volume changes as controller messages, gives you most of the functions of the SET-UP Mode. To re-create a sequenced performance, you would only need the Patch Bank (and the Timbre Bank if Memory Bank timbres are used).

* To play timbres from all sections of the MT-32, both preset and Memory Bank. Because there are only 128 program change numbers (some of which you may not be able to easily generate from your master keyboard), and 222 possible timbres in the MT-32, you are forced to either program the patch bank, or copy the preset timbres you need into the (volatile) RAM memory bank.

** Note **

All parts on all channels (except the Rhythm part) use the one and only Patch Bank - the same program change number will call up the same timbre in each of the parts. If you are using multiple timbres, utilizing the Patch Bank as a program change table (as in the above examples) can become incredibly confusing or even impossible, so don't bother unless you're an accomplished mental gymnast.

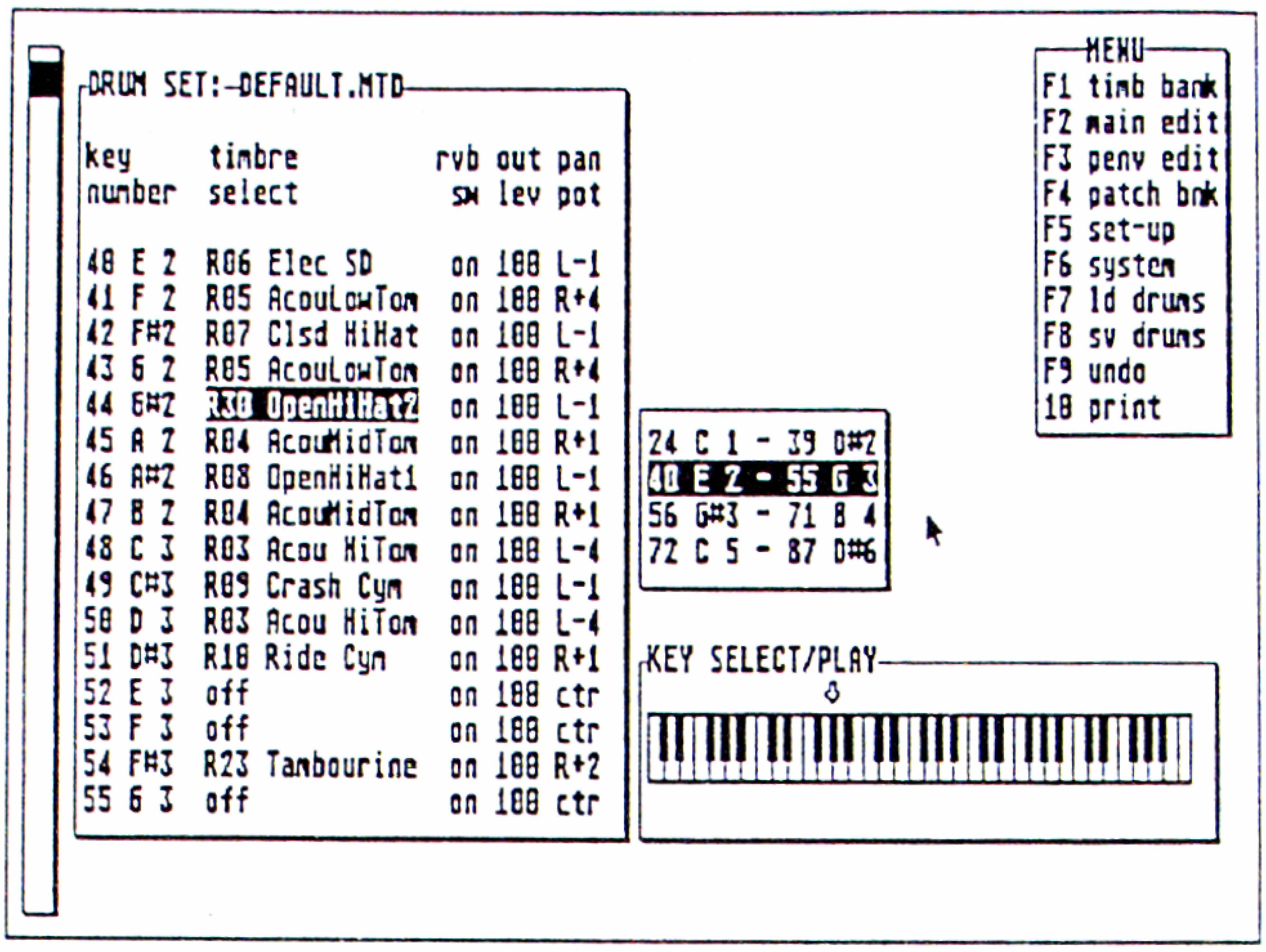
There are several factors to consider before selecting the best method to use:

> * Do you need to use any edited timbres? If you need to use RAM timbres anyway, it would make sense to copy the preset timbres you need into the RAM timbre bank (see the copy or **get parts** commands). Then, load a Patch Bank which calls timbres in the Memory Bank (e.g. MEMORY_B.MTP on the Program Disk), don't forget to save your timbre bank, and you're all set.
>
> * Are you using only presets? If so, probably the best thing to do is to load a Patch Bank which calls timbres from the preset banks A and B. If necessary, you could even program your own "Best of Presets" Patch Bank.

Whatever your Patch Bank preference, I would definitely recommend saving your most-used Patch Bank as the default Patch Bank. See Appendix A for details.

CHAPTER 11

DRUMSET MODE



```
DRUM SET:-DEFAULT.MTD

key     timbre           rvb out pan
number  select            sw lev pot

40 E 2  R06 Elec SD       on 100 L-1
41 F 2  R05 AcouLowTom    on 100 R+4
42 F#2  R07 Clsd HiHat    on 100 L-1
43 G 2  R05 AcouLowTom    on 100 R+4
44 G#2  R30 OpenHiHat2    on 100 L-1
45 A 2  R04 AcouMidTom    on 100 R+1
46 A#2  R08 OpenHiHat1    on 100 L-1
47 B 2  R04 AcouMidTom    on 100 R+1
48 C 3  R03 Acou HiTom    on 100 L-4
49 C#3  R09 Crash Cym     on 100 L-1
50 D 3  R03 Acou HiTom    on 100 L-4
51 D#3  R10 Ride Cym      on 100 R+1
52 E 3  off               on 100 ctr
53 F 3  off               on 100 ctr
54 F#3  R23 Tambourine    on 100 R+2
55 G 3  off               on 100 ctr
```

```
24 C 1 - 39 D#2
40 E 2 - 55 G 3
56 G#3 - 71 B 4
72 C 5 - 87 D#6
```

The MT-32 Rhythm part Set-up (i.e. "Drum set") is quite flexible, and fun to play with. MIDI note numbers (at least 64 of them) may be programmed to play any timbre in either the Rhythm preset timbres, or the Memory Bank. Not only that, but each key has its own panning, volume, and reverb on/off settings. That's basically all there is to it, but the possibilities are endless for "prepared" keyboard fun.

Key Select/Play Box

As with the PATCH BANK Mode, you may select a range of note numbers to show and edit by clicking in the box to the right of the data display. In addition this mode has a special **KEY SELECT/PLAY** box. Click on one of the keys in the **KEY SELECT/PLAY** box and three things happen: The parameter select cursor is moved to that key's parameter display, the key sounds (similar to playing the mouse with the right mouse button), and a pointer points at the current key on the **KEY SELECT/PLAY** keyboard, making it easy to re-select (and thus audition) that key.

Loading and Saving Drum sets

ld drums
sv drums
Drum sets are individually loaded from and saved to disk with these commands. When a drum set is loaded with this command, it is automatically sent to the MT-32. The commands are similar to the **load file** and **save file** commands in the TIMBRE BANK Mode.

The current drum set file name is shown at the top of the parameter display box.

Undoing Changes

undo
The **undo** command will undo the most recent edit, or the latest **ld drums** command.

CHAPTER 12

MIDI MERGE

There are several good ways to patch together a system which will take advantage of the MIDI merge features built into this program. The system you choose will depend on the equipment you have.

How Merge Works

The MIDI merge function contained in this program combines external MIDI data with System Exclusive data generated by the program. When **Merge** is set to any value other than **off**, the MIDI information which appears at the computer interface MIDI in is "echoed" to the MIDI out, and merged with System Exclusive data from this program.

One of the incoming channels may be soloed (only input on one specific channel is merged) or rechannelized (input on all channels is converted to the specified channel). These options are also selected with the **Merge** parameter.

A Review of Merge Modes

merge

on: Everything is retransmitted, except during disk access or printing, and combined with System Exclusive messages from this software. System Exclusive messages are not re-transmitted.

solo: Only messages on the designated **Solo/Rech/Mouse Channel** are re-transmitted.

rechannelize: Messages received on ANY MIDI channel are retransmitted on the designated **Solo/Rech/Mouse Channel.**

off: Nothing is re-transmitted.

Using Merge

With an External Sequencer...
If you own an external sequencer or drum machine, or another computer which is used for sequencing, you will be able to play a sequence concurrently and adjust synthesizer parameters or load patches from the computer. With the solo feature, the instrument you are voicing (or any other channel) may be soloed in the sequence.

With a Master Keyboard...
Another typical case in which Merge is especially useful is with rack mounted modules like the MT-32. Merging allows you to play your rack mounted synth from a master keyboard while you voice it.

With Alternative Controllers...
Some of us use special controllers, like guitar or wind controllers (harmonicas, kazoos, etc.). Using MIDI merging, the synth may be voiced with ANY MIDI controller.

** Note **

When Merge is on, the program attempts to keep track of notes, so that it may know when to allow certain changes (such as turning merging off) to occur without causing stuck notes to occur. If the program stops while changing a merge related parameter, it's waiting for all notes to be turned off.

** Note **

It is always a good idea to have a MIDI thru box or switcher to feed all the slaves. A MIDI matrix switcher, such as those made by Kamlet, 360 Systems, J.L. Cooper and others, can be very useful in any system. The ideal switcher would have one input and output for each MIDI instrument. If inputs are lacking, an extra input switch can select the slave output to be connected to the main switcher, to be used when and if bidirectional communication is needed, for example, to get sounds from the slave.

APPENDIX A

HELPFUL HINTS

Start out with a bank of initialized timbres, which should be available on your disk (INITBANK.M32). Save this bank under the name WORKBANK.M32 or whatever. As you edit timbres, store them into this "scratch" bank. You should periodically save this bank to disk, using an appropriate name (e.g. the session, song or date). With all the cheap storage that this program affords, there is no reason to be stingy about saving timbres which may not be perfect, they may turn out to be useful someday.

Changing the Default Bank

To get your own bank of sounds to load automatically at program start-up, all you need to do is to save the bank file you wish to use as the default under the name INITBANK.M32 (remember, the ".M32" is added by the program) on the disk that you normally boot the program from. When the program first runs, it will load this file and then send it directly to the MT-32.

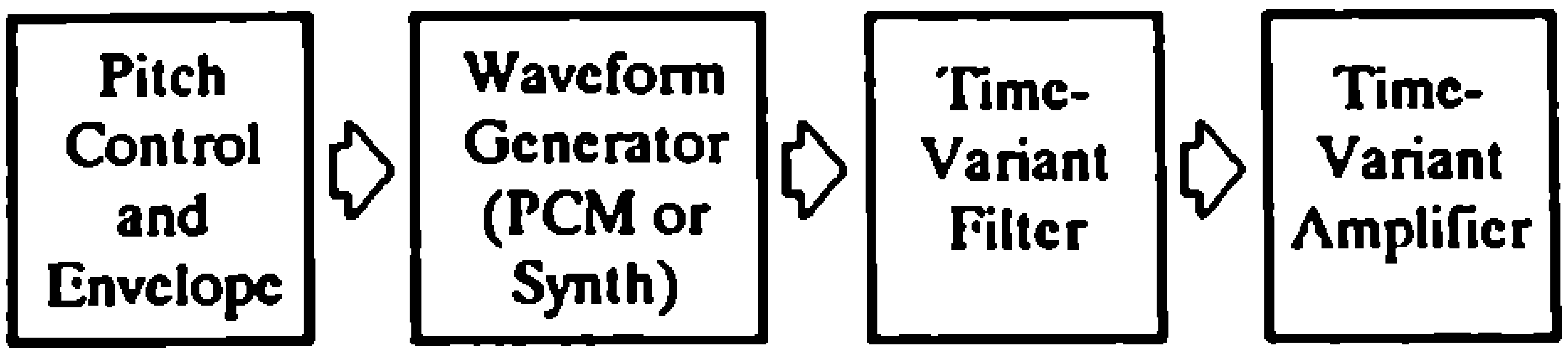
Changing the Default Patch Bank, Set-up, and Drum set

Save the Set-up, Patch Bank, and Drum set that you want for defaults under the name DEFAULT, on the disk that you normally boot the program from. When the program first runs, it will load these files and then send them directly to the MT-32.

APPENDIX B

VOICING THE MT-32

Herein lies a crash course on the care and feeding of your MT-32. You WILL learn to make great sounds on it, without randomizing! Like its big bro, the D-50, it is an extremely easy and rewarding synth to program.



The partial is based on a waveform generator, which can either be a synthesizer waveform (triangle or square), or one of 100 PCM sampled waveforms. This is the source of all the noise.

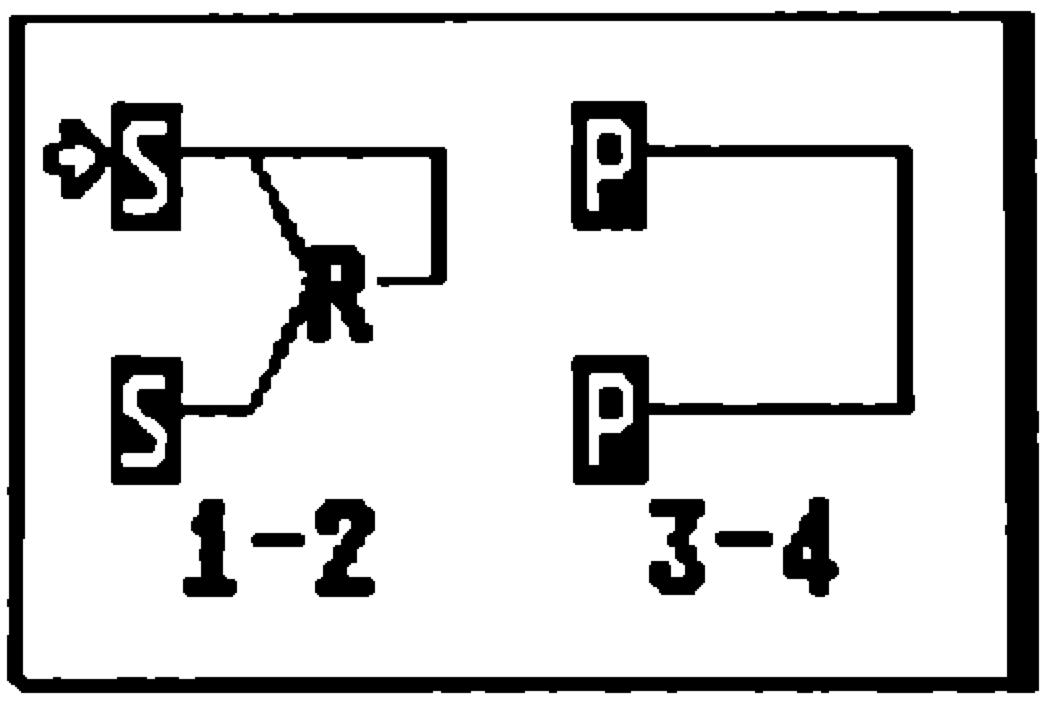
The Pitch parameters determine the initial pitch of the Waveform Generator, and how it relates to key position and the pitch bender. There is also a Low Frequency Oscillator (LFO) which can modulate the pitch.

The Pitch Envelope controls the pitch of the Waveform Generator over the course of time, after a note is sounded.

The pitch-modulated Wave Generator output is then run through a Time Variant Filter, which is basically just like the VCF of yore - same idea. Its basic purpose is to modify the signal's frequency spectrum over time.

Finally, the pitch-modulated and filtered Wave Generator output is sent to the Time Variant

Amplifier, which shapes the volume of the timbre over time when a note is played.



S = Synth Partial

P = PCM Partial

R = Ring Mod

A timbre is a collection of up to four partials, arranged into groups of two called structures. The structure not only determines how the two partials are connected, but it also chooses whether the PCM or synthesizer waveform will be used for each partial.

In several structures, one partial "ring-modulates" another. Two of the structures are stereo structures, placing the two partials in separate speakers.

There is an overall **envelope mode** parameter, which may be set so that sustain is ignored for all envelopes - especially useful for rhythm sounds.

Each partial's output may be muted, so that partials which don't need to sound won't be needlessly causing a frog in the MT-32's throat (there can be a total of only 32 partials sounding at any given time).

The structure, envelope mode, mute, and the name of the timbre are called the "common" parameters, since they are common to all of the partials.

Common Parameters

Structure

The structure controls both the type of waveform used for each partial, and the way the partial's output is utilized. A partial can have a synthesizer waveform (S), or a PCM waveform (P). A partial's output may "ring-modulate" with another partial. Otherwise, it may be simply mixed with the other partial. If a partial is a PCM partial, the Time-Variant Filter will have no effect. This is why all TVF parameters are shown as asterisks when a PCM partial is displayed.

There are two structures for each timbre. One handles partials 1 and 2, the other partials 3 and 4.

When you change the structure number, you will see the graphic display change to show you how the partials are connected. A pointer points to the currently selected partial. The **P** or **S** refers to the partial's sound source type. Ring modulation is shown by an **R**. The following table is a more literal description of the various structures.

Structure Output Descriptions

1 Synth mixed with Synth
2 Synth mixed with Ring Mod by Synth
3 PCM mixed with Synth
4 PCM mixed with Ring Mod by Synth
5 Synth mixed with Ring Mod by PCM
6 PCM mixed with PCM
7 PCM mixed with Ring Mod by PCM
8 Synth panned right, Synth panned left
9 PCM panned right, PCM panned left
10 Synth Ring Mod by Synth (Ring Mod only)
11 PCM Ring Mod by Synth (Ring Mod only)
12 Synth Ring Mod by PCM (Ring Mod only)
13 PCM Ring Mod by PCM (Ring Mod only)

Mute

Any partial may be muted by clicking on the **P** or **S** corresponding to that partial. If a partial is muted it is shown in normal video. Usually, the **P** or **S** is shown in inverse video, so it looks like a little box.

Muting is an extremely handy programming tool. It is used to isolate a single partial, making it easy to hear that partial's contribution to the total sound.

Also, some timbres don't need all four partials. The unused ones are muted. My understanding is that this makes it possible for more voices to sound simultaneously, as there is a 32 partial limit in the MT-32.

Envelope Mode

The envelope mode may be set to **no-sus**, meaning that the sustain section of an envelope is ignored. As soon as the envelope reaches the point at which the sustain section would have started, it begins the release section. A setting of **normal** gives you sustain as usual. This envelope mode affects all envelopes in the timbre.

Name

The 10-character name is part of the common data. Any standard ASCII character may be used.

Partial Parameters

Pitch

coarse: The basic pitch of the partial's sound generator when Middle C (C4) is played is set here. It is adjustable in semi-tone steps from C1 to C7.

fine: Fine adjustment of the pitch (+ /- 50 cents).

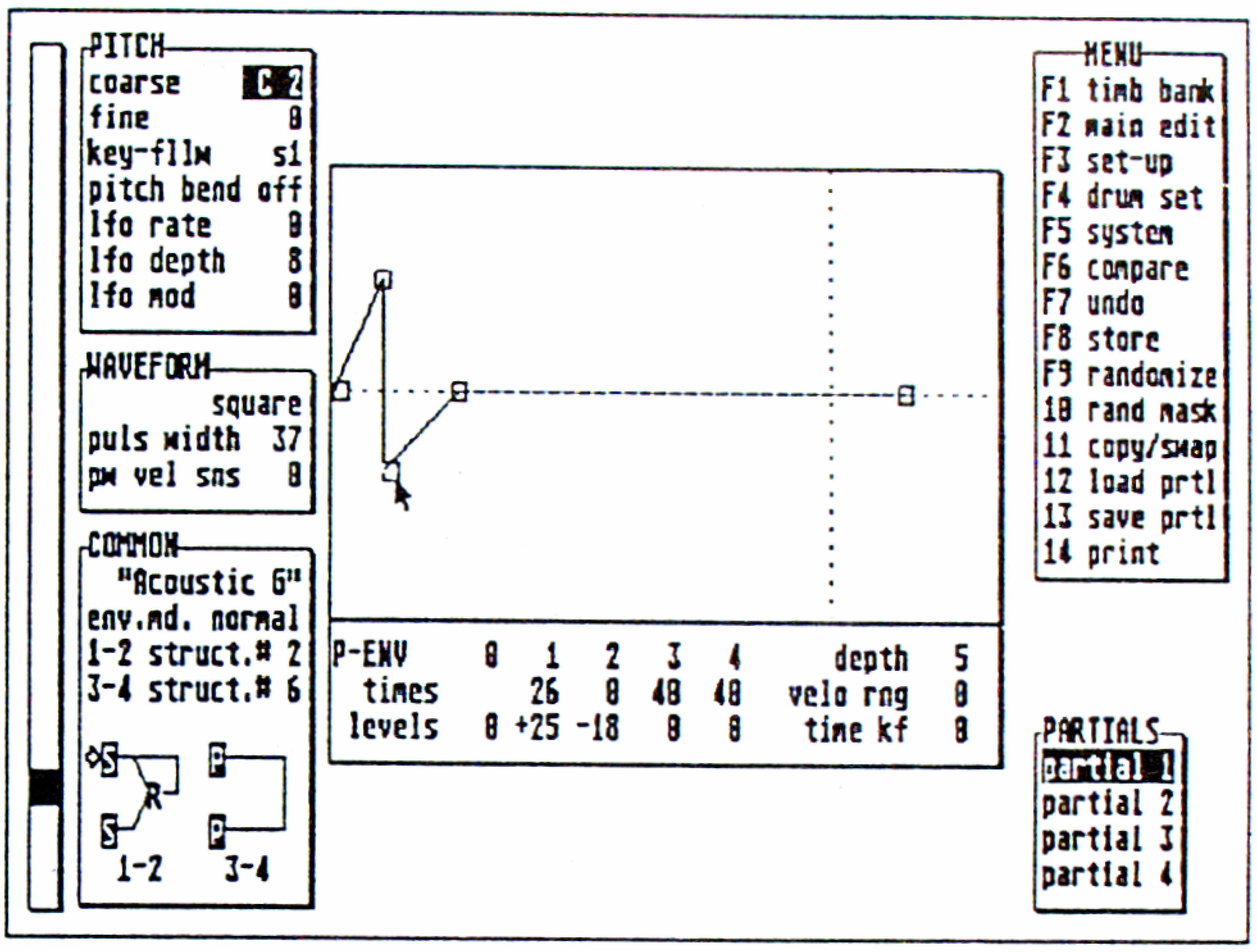
key-fllw (key follow): Determines the extent to which the pitch will follow the key number. Besides the semi-tone per key scale, you can get quarter tones, eighth tones, fixed tuning, even backwards keyboards. The value shown represents how many octaves are changed over 12 keys. The values **s1** and **s2** are slightly stretched tunings (slightly greater than 1, which is the standard).

pitch bend: The effect of the pitch bender on this partial's pitch may be turned on or off.

lfo rate: This sets the rate (frequency) of the pitch mod (vibrato) LFO from 0 to 100. Higher values represent higher speeds.

lfo depth: This sets the depth of pitch modulation direct from the LFO (0 to 100). Higher values mean more modulation.

lfo mod: This sets the sensitivity to pitch modulation from the LFO via the mod wheel (0 to 100).



```
PITCH
coarse         C 2
fine             0
key-fllw        s1
pitch bend off
lfo rate         0
lfo depth        8
lfo mod          0

WAVEFORM
            square
puls width      37
pw vel sns       0

COMMON
   "Acoustic 6"
env.md. normal
1-2 struct.# 2
3-4 struct.# 6

P-ENV     0   1   2   3   4      depth    5
  times      26   0  40  40   velo rng    0
  levels  0 +25 -10   0   0    time kf    0
```

Pitch Envelope

times and levels: These control the shape of the pitch envelope. With this envelope only, there are parameters for both the starting and ending levels of the envelope, making it easy to bend up from or trail off to other pitches.

depth: This sets the overall maximum effect of the pitch envelope from 0 (no effect) to 10 (+/- 3 octaves).

velo rng (velocity range): As this parameter is increased from 0 to 2, the effective depth for lower velocities is decreased. It has no effect if you play hard, but if you play softer you'll notice less pitch envelope depth.

time kf (key follow): This parameter is used to speed up the pitch envelope as you go up the keyboard from Middle C (C4), and slow down the envelope as you go down the keyboard. The range is from 0 (no effect) to 4 (maximum effect).

Waveform

waveform or **PCM wave number**: This selects the waveform of the sound source. Depending on the structure selected for the partial, it may be either a PCM sampled sound, or a synthesizer waveform. Some of the PCM sounds are "one-shot" sounds, usually the attack sound of a particular instrument. Others are loops which may be used for sustained sounds. A synthesizer wave may be either square or sawtooth. When a square wave is selected, the Pulse Width controls come into effect.

pulse width: This changes the "duty cycle" of the square wave, which changes its harmonic content in a way that will be familiar to all you analog style synthesists. At zero, the wave is a square wave, with equal up and down cycles. At 100, the upper cycle is much longer than the lower cycle, so that the ratio of upper to lower, hitherto known as the pulse width (and destined to take the place of the mud shark in your mythology) is bigger.

pw vel sens (pulse width velocity sensitivity): Velocity can increase or decrease the initial Pulse Width setting. This parameter sets the sensitivity from -7 to +7. With negative values, the pulse width becomes smaller by playing the keyboard harder. With positive values it becomes larger.

Time-Variant Filter

frequency: The cutoff frequency of the filter. That is, the frequency above which the filter will begin to attenuate. It is adjustable from 0 to 100. As you lower the cutoff value, more high frequencies are attenuated and the waveform gradually approaches a sine wave, then fades out as the fundamental frequency is attenuated.

resonance: This boosts frequencies around the cutoff frequency. The amount of boost is adjustable from 0 to 30. As resonance is boosted, the sound becomes more "unnatural" and "electronic." Too much boost and your O-rings may go, causing a "major malfunction." Unlike most analog filters, the resonance cannot be set so high that the filter acts like an oscillator, which may disappoint analog fans.

freq kf (frequency key follow): Key follow can change the frequency cutoff point according to the key played. As with Pitch Key Follow, the value represents how many octaves the filter changes over 12 keys. A value of "1" is standard, but lower values are often used to relatively decrease the high harmonics of the higher notes (high notes can frequently sound too "bright" or "piercing" otherwise).Effect due to Frequency Key Follow is always zero at Middle C (C4).

NOTE: The Bias Graph for the TVF shows the effect of both the **freq kf** parameter and the **bias pt** and **bias lvl** parameters. The vertical range shown on the graph is approximately two octaves down and three octaves up. The horizontal dotted line represents the unadjusted cutoff frequency.

Bias Graphs may be viewed in MAIN EDIT Mode by clicking on the word **bias**, just below the menu.

bias pt and **bias lvl** (bias point and level): This is another "key follow" adjustment, which serves exactly the same purpose, but is more flexible than the **freq kf** described above. With these parameters, you may select the range where the adjustment takes place as well as the amount of the adjustment. The range (bias point) may be selected from <A1 to <C7 (read "less than A1" to "less than C7") and from >A1 to >C7 ("greater than A1" to "greater than C7").

The bias level for the TVF can be set from -7 to +7. Positive values raise the filter cutoff curve over the specified range, while negative values lower it.

TVF Envelope

times and levels: These parameters control the shape of the envelope (see the section on MT-32 Envelopes).

depth: This sets the amount of envelope used to control the filter cutoff frequency. The cutoff frequency is added to by the envelope - this parameter sets the depth of this modulation. A value of 0 gives no envelope effect, while a value of 100 gives full envelope effect.

NOTE: If the frequency is set too high to start with, you will not get the full effect of the envelope, as the filter frequency will "max out."

velo: The amount of velocity may also control the depth of the envelope, adding to the initial depth. Use **depth** to set the low-velocity depth of the envelope, and adjust **velo** so that the amount of envelope modulation sounds right when you play hard.

depth kf (depth key follow): The position of the key may also control the depth of the envelope. Zero means no change according to key, but greater values give keys above Middle C (C4) more envelope depth, and lower keys less depth. The depth at Middle C remains constant.

time kf (time key follow): The times of the envelope may be modulated by key position. As this parameter is increased, envelopes for notes above Middle C (C4) become shorter, and those below Middle C become longer. The higher the value, the more pronounced the effect. **time kf** can be used to simulate the effect of string instruments, where higher strings decay more quickly than lower strings.

Time-Variant Amplifier

level: This sets the overall level of the partial, by setting the depth of the amplitude envelope. The range is from 0 to 100.

velo: This sets the amount which the depth of the envelope (level) is affected by velocity. Adjustable from -50 to +50, negative values lower the level as you play harder, while positive values increase it.

bias pts and **bias lvls**: The TVA has two programmable bias curves to handle keyboard scaling (key follow) chores. The bias points are the same as with the TVF. The bias levels only go negative (0 to -12), thus attenuating the levels within the bias range.

times and **levels**: These parameters control the shape of the TVA envelope (see the section on MT-32 envelopes).

time kf: This changes envelope time relative to key position, like the TVF parameter of the same name.

vel->time: With the TVA envelope, velocity can be set to modulate the time of the first stage of the envelope, making it faster when the key is struck harder. As the value is increased from 0 to 4, the effect becomes greater.

Patch Parameters

Patch parameters exist in both the SET-UP Mode, which controls the currently selected patches, and the PATCH BANK Mode, which is used to edit the stored patches. For more on these parameters, read pages 23 and 24 of the MT-32 manual.

timbre select: This selects the timbre which is pointed to by the patch. The timbre bank may be set to **A** or **B** (presets), **M** (programmable memory), or **R** (preset rhythm timbres). The timbre number may be set from 1 through 64, except for rhythm, which accepts only 1 - 60 (31 - 60 are the same as 1 - 30). Note that this points to a timbre, but the actual timbre itself is not stored as a part of the patch.

key shift: This is used to transpose the timbre +/- 24 semi-tones.

fine tune: This parameter detunes the timbre +/- 50 cents.

bend rng: This sets the range of the pitch bender in semitones from 0 (no bend) to 24 (two octaves).

assn mode: This sets the key assign mode for the patch. There are four modes, all polyphonic:

- POLY 1: Single Assign, priority to data last received.
- POLY 2: Single Assign, priority to data first received.
- POLY 3: Multiple Assign, priority to data last received.
- POLY 4: Multiple Assign, priority to data first received.

rev sw (reverb switch): This controls whether or not the output of a patch is sent to the reverb (on or off).

output level (not stored with the patch): Controls the overall output level of a part (0 to 100).

pan pot (not stored with the patch): Controls the stereo placement of a part (-7L to +7R, CTR is center).

System Parameters

There's only one set of these parameters in the MT-32. Their values will remain constant unless you edit them or load a Set-up from disk. For more on these parameters, read page 22 of the MT-32 manual.

master tune: Changes overall pitch of MT-32. The displayed range is -50 to +50, with zero being concert pitch A = 440 Hz.

master volume: Sets overall volume of MT-32 from 0 to 100. I've found that wherever my MT-32's knob is when it is powered up is where the Master Volume gets set.

reverb mode: Reverb program - **room, hall, plate** or **delay.**

reverb time: Sets the reverb duration (1 - 8).

reverb level: Sets the reverb intensity (0 - 7).

NOTE: The settings for reverb time and reverb level are listed incorrectly in the MT-32 manual.

partial reserve (Parts 1 - 8 and Rhythm): The number of partials reserved for a certain part can be set from 0 - 32. If a part has no partials assigned to it, that doesn't mean that it will never sound - due to the MT-32's dynamic assign scheme, any unused partials are appropriated by a part that needs them. However, if partials become scarce, those parts with reserved partials take precedence over other parts. See MT-32 manual, page 22 for another attempted description.

MIDI channel (Parts 1 - 8 and Rhythm): The MIDI channel on which parts receive note and control data, program changes, etc. is set from 1 - 16, or may be turned off. Usually, you'll want each part on a different channel because, if a program change comes in, all parts on the same channel will be playing the exact same thing. If you use the computer to load or edit a Set-up, however, you can successfully stack eight different timbres plus all the rhythm timbres on the same channel.

APPENDIX C

SERVICE AND SUPPORT

This program and the associated documentation are copyright (C) 1986 and 1988 by Robert J. Melvin. This program is licensed to be used on a single machine, by the original purchaser of the program only. It may not be copied without explicit written permission.

The diskette on which the program is furnished is warranted for ninety (90) days from the date of delivery. The program is not guaranteed to meet your requirements, and operation of the program is not guaranteed to be uninterrupted or error free. **In no event will Robert J. Melvin or Dr. T's Music Software be liable for any damages, including any lost savings, lost profits, or other incidental or consequential damages arising out of the use or inability to use this program, even if we have been advised of the possibility of damages. Dr. T's Music Software and Robert J. Melvin shall not be responsible for any damages claimed by any other party, resulting from the use or attempted use of this program.** All warranties implied are with Dr. T's, not your local dealer. If problems arise, call Dr. T's directly.

Copy Protection and Backups

The program disk which contains MT32EDIT.PRG is copy protected, and must be inserted in drive A on the Atari, or any drive on the Amiga, when running the program from either the hard or floppy disk. We regret the necessity for copy protection, but experience has shown this to be the only way to deal with unauthorized distribution of our programs. **Software piracy is a crime and deprives your fellow artists of their rightful income.** Because of this problem, we are much more fun to deal with if we have your completed warranty card in our hands when you call for technical support.

Backup disks may be obtained from Dr. T's for $15, when you send in your warranty registration card. You must include either your completed warranty card or your diskette serial number and a copy of the sales receipt with your request for a backup. There is a $15 charge for the replacement of program disks that become defective more than 90 days after the date of purchase. We will only sell one backup disk to each customer, and you will be required to return either your backup or original disk when ordering updates or replacement disks.

When returning disks for replacement or updates, **please send the disk by UPS, Federal Express, Express Mail, or some other service that will allow you to trace the shipment.** We're sorry, but we cannot be held responsible for packages sent via regular US mail.

Dr. T's reserves the right to make improvements to the program without notice, and to make what we consider to be reasonable charges for updates.

What To Do If Problems Arise

If you have problems with the MT-32 Editor that you are unable to solve with the help of the manual, Dr. T's maintains a customer service staff of experienced MIDI musicians. We are happy to help you with questions regarding this or any of our other programs, but due to the incredible variety of MIDI products available today, **we cannot answer questions regarding other manufacturer's hardware or software, including questions on the basic operation of GEM, Intuition, the Atari ST, the Commodore Amiga, or any other computers.**

When calling Dr. T's for customer service, there are a number of things that you can do to help us help you, which can also save you money on your long distance bill. Here is a check list of things to have ready when calling Dr. T's:

* Your diskette registration number.

* Your manual.

* Computer turned on and the MT-32 Editor booted.

* Any data related to the problem.

* Information on your computer's disk drive configuration, monitor type, printer type, etc.

* Paper and pencil.

When you call us, we will walk you through the program and ask you questions about what happens, so it is very important that you have this material at hand when calling. If you don't have this ready, we will ask you to call back later with the required information. When you've gathered everything together, call us at (617) 244-1542 between 10 AM and 4 PM Eastern Standard Time, Monday through Friday.